amateur radio

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JANUARY
1967

25c

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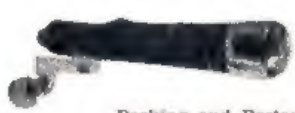

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CONTENTS

Propagation of Amateur Signals Allied With Ionospheric Predictions

F. T. HINE, VK2QL*

BY listening to many Amateurs, both v.h.f. and h.f., I am convinced that they miss one of the most interesting facets of Amateur Radio—the study of propagation of the signals they transmit. They are quite content to follow the pattern of those who pick a racehorse by the use of a pin.

How many have proudly displayed their station to visitors, received the usual question, "Who can you talk to?" and this type of thing follows: "The whole world." "Well, let us hear Timbuctoo." The receiver is promptly tuned back and forth looking for the station from Timbuctoo, when in general, to use a typical Aussie phrase, "They have Buckley's chance of finding one."

I hear Amateurs on the band saying it won't be long before 10 metres is wide open for DX again. I won't go so far as to refer to Mr. Buckley here, but from information I have received from the Prediction Service, and which you can study in Sept. "A.R.," it does not look like 10 metres will be a good DX band in the coming cycle.

SUNSPOT ACTIVITY

Prior to the last sunspot minimum, there were two schools of thought, one with the theory that the next cycle would exceed 1958 in sunspot activity, the other that we would not again reach high sunspot activity in the present century. Neither of these two camps were guessing, but trying to make a forecast from records available over many years.

Now that we are well past the minimum, it looks as though the second group will be right as far as the present cycle is concerned.

The subject of propagation, allied with predictions, is an enormous subject and I must assume that readers have some knowledge of what goes on in the ionosphere and its effect on Amateur communications. I do not profess to be a "back room boy" on this subject and can only pass on what I have learned by reading and on-the-air experience. I have to change my thinking from time to time, and will need continually to do so as information from satellites is generally available. If you have access to, and Divisional libraries should have copies, read the "Sun Spot Story" in "CQ" for April, May and June, 1961. This was produced, due to demand, into one publication and made available for interested people by "CQ". I find myself referring to my copy from time to time.

It is interesting to note that some of the points made in the "Sun Spot Story" in regard to the expected minimum period were not borne out. One of these was the minimum period would probably occur in May 1965. If you refer to the tables mentioned above, you will see the lowest smoothed sunspot number occurred in Oct. 1964 and the lowest mean in July 1964. Further reading is available from your Division by borrowing the copy of the handbook issued by the Ionospheric Prediction Service (I.P.S.).

I for one expected very good DX conditions on 3.5 Mc. during the last minimum period and when this did not eventuate, discussed the matter with a member of the I.P.S. in Sydney to learn that the absorption was not a great deal less on that band during varying periods of the cycle. I learned that if we were able to have a frequency within the region of the 10 Mc. band, we would have a good all round working band. This makes sense when one considers how reliable the 9-10 Mc. s.w. broadcast band is.

Just reverting back to sunspots briefly, we find the peak for all time was just over 200 in 1958. The next highest was the previous cycle in 1947 with a sunspot number of 155, and in 1778 the number was also 155; these were the highest over a period of 169 years. In 1804 and 1816, the peak number reached only 45 and in 1906 approximately 75. The forecast from Zurich for the present cycle maximum is 100 and due to occur in the latter part of 1968. This forecast is similar to that actually occurring in 1917, and approximately half of the last peak.

The graphs I have (see "CQ" May 1961) commence from the year 1750 and show the rise and fall of each cycle. No two cycles, although known as 11-year cycles, are the same—the shortest being 9 years and the longest 14 years. The ascending period of a cycle varies between 2.6 and 6.9 years, the last cycle rising in 3.9 years. The descending period varies between 4 and 10.2 years. This may sound a little "Irish," but it is possible at the minimum period to have spots on the sun from the old and the new cycle at the same time and this occurred at the last minimum period.

PREDICTIONS

Predictions are concerned with the propagation of radio signals by reflection from the ionised layers and this method is used for communication over long distances.

There is always a day-to-day variation and it must be remembered that the same set of circumstances do not occur from day to day and of course this is more pronounced from month to month and each year of what is known as the 11-year cycle. Coupled with all this is a geographical variation. See Fig. 1 for an indication of seasonal variation.

Prediction charts are prepared for estimated propagation at the middle of each month, and are never the same for two successive months. You only need to take a transparent piece of paper and plot the same chart for different months on it to verify this.

Propagation may involve one or more reflections from the ionosphere. There is, however, a limit to the length of a single hop set by the height of the reflecting layer. It is generally assumed when predicting the Maximum Usable Frequency (m.u.f.) that the signal will travel by the minimum number of hops, preferably by the F2 layer. For circuits longer than 3,000 km., it is considered that only the state of the ionosphere at the points of reflection nearest each

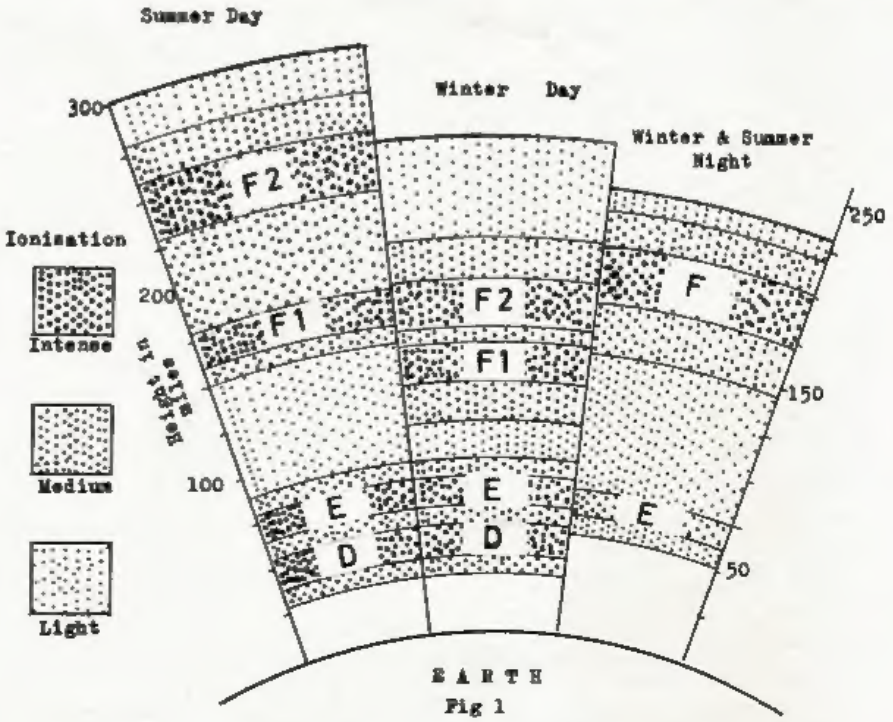


Fig 1

* 30 Abbotsford Road, Homebush, N.S.W.

terminal will affect the m.u.f. for the circuit, and for circuits under 3,000 Km. the state of the ionosphere at the mid-point of the circuit will determine the m.u.f.

MAXIMUM USABLE FREQUENCY

In order that signals transmitted from one place should be received at another, it is necessary for the frequency of the signal to be below the maximum usable frequency for that path. The m.u.f. depends on the state of the ionosphere at the point of reflection and the angle at which the signal strikes the layer—plus other factors to be discussed later. As mentioned earlier, circumstances change daily, so therefore the m.u.f. will vary. When your frequency exceeds the m.u.f., ionisation at the point of reflection is not strong enough to bend your signal back again.

One often hears the comment "I was talking to so and so. He had a beautiful signal and next time I went over he was gone." The answer is simple. You were operating right below the m.u.f. existing at the time and whilst you were transmitting, the m.u.f. dropped slightly and the band closed between you. You can also get mixed up in an ionospheric disturbance and this will be discussed later. Remember you get "beautiful" signals right on the m.u.f., but they may not be beaut for long. Frequencies just above the m.u.f. will not be received in normal propagation, whilst those below are received, and it is therefore possible for one end of our bands to be open and the other closed to the same DX.

The m.u.f. for a circuit does not depend on the type of equipment or antenna used, but on the ionosphere. All the r.f. and gain from your antenna you can muster will not enable you to communicate by F2 layer reflection above the m.u.f.

ABSORPTION LIMITING FREQUENCY

In addition to the m.u.f., there is a lower limit to the frequencies which can be used for communication between two points. This is due to absorption of the signal in the D region of the ionosphere (see Fig. 1) which is the lowest region of pronounced ionisation and extends 30 to 50 miles above the earth and exists mainly in the daylight hours. This is known as the Absorption Limiting Frequency (a.l.f.). Whilst there are large variations in the m.u.f. during a sunspot cycle, there is not a great deal of change in the a.l.f., and for this reason it has not been worth showing the a.l.f. in the various charts which will follow in this discussion.

When say 28 and 14 Mc. are open at the same time, it will take considerably more power on 14 Mc. to equal the strength of the 28 Mc. signal. Since the m.u.f. is the highest frequency that can be used for F2 layer reflection, absorption is at its maximum at this point. The level of absorption varies greatly throughout the days, seasons of the year and geographically. Absorption is more intense in equatorial regions where the sun is more directly overhead than in temperate latitudes and is generally greater during summer than winter. The a.l.f. can also cause opposite ends of a band to be open or closed, but as signals are not as strong and noise level is much higher, it is more difficult to detect than the m.u.f.

OPTIMUM WORKING FREQUENCY

It has been observed that the F2 layer is normally within 15% of its calculated height. To enable commercial circuits to maintain good continuous communication they keep away from the m.u.f. and so keep out of strife. They normally use what is known as the Optimum Working Frequency (o.w.f.) and this is assessed as 10% below the m.u.f.

Take a look at the charts in general in recent issues of "A.R." and you will see that in nearly every case the a.l.f. at some time of the day exceeds 14 Mc. The chart to Rio de Janeiro often is an interesting one from an Amateur point of view. When the a.l.f. exceeds 14 Mc., frequencies of 14 Mc. and below are completely absorbed and reference again to the charts will show a number of instances where the a.l.f. exceeds the m.u.f. When we have this situation, no communication is possible by F layer reflection.

Entrants in R.D. Contests well remember how 14 and 21 Mc. open unexpectedly and erratically for short or long periods to an adjoining State. This is not caused by F layer reflection, but some kind of anomalous propagation, e.g. E layer or Sporadic E. This type of thing cannot be predicted, not at the present state of the art.

SOLAR RADIATION

In dealing with radio propagation, it is probably not fully realised just what an important part the earth's magnetic field and the sun play. There is evidence that the earth's magnetic field exerts considerable influence on the degree of ionisation of the F2 layer. The **electrical** intensity of the ionosphere depends on the ultra violet radiation from the sun. The greater the amount of radiation from the sun, the more electrified the ionosphere becomes and the better h.f. propagation exists. If radiation is low, then propagation is poor. This radiation from the sun produces ionisation of the various layers shown in Fig. 1.

For short and even medium circuits, it may be possible to have propagation from the E and F1 layers during the day, but at night and for longer distances, only the F2 layer is satisfactory and consequently this is the layer influencing our DX working.

Intense ultra violet radiation from the sun causes an increase in ionisation of the D region and can cause a complete absorption of radio waves in the sunlit hemisphere of the earth. Absorption decreases as the frequencies increase but it also increases as the path of the signal nears the point immediately below the sun and this effect controls the a.l.f.

During daylight, radio signals may be propagated from place to place by several methods. Frequencies transmitted by ionospheric reflection usually lie in the h.f. band, but under certain conditions the m.f. and v.h.f. bands can be affected.

The greater the intensity of the reflecting layer ionisation, the more signal is reflected. The D layer is only slightly ionised and reaches its maximum at noon. The frequencies of 1.8 Mc. and 3.5 Mc. are completely absorbed by this layer. Only high angle radiation is reflected by the E layer except during low sunspot activity. The smaller or lower the angle of radiation, the less bending is required to bring the signal back to earth and also the lower the angle, the greater the distance between the point where the wave leaves and returns to earth. The less bending required, the less the absorption.

The aim of all Amateurs should be to get the strongest signal to its intended destination and therefore every available means, within the regulations of course, should be used to achieve that end. The greatest barrier to this is absorption, disregarding of course the point made previously, of keeping below the m.u.f.

One aspect some Amateurs are faced with is a poor location, and for this, predictions cannot be blamed, because they can hear their next neighbour working the DX according to prediction. The prediction charts can do little for the Amateur in a poor location other than make him frustrated.

For **short range** work, it is important that the angle of radiation is high.

The lowest useful layer for distances up to 750 miles is the E layer. It is mainly a daytime layer and practically disappears at night, therefore DX for v.h.f. operators is very poor at night. This layer is not considered satisfactory for multiple hop working. Bear in mind the angle of radiation for the E layer must always be higher than for the F layer. The height of the E layer remains practically constant throughout the day.

PREDICTION CHARTS

The prediction charts you see in "A.R." are prepared on the basis of an angle of radiation of 5°, and a distance of 2,000 miles, so if your radiation angle is high, you should not expect your DX working to be in accord with the predictions. The higher your angle of radiation, the further away from the predicted DX you will find your working. The charts are for a terminal located between Canberra and Sydney, so Amateurs in other States will find them not completely true for their own activities as latitude and longitude each combine to change the o.w.f. The charts are reasonably accurate for a QTH within 3° of latitude and longitude of the terminals listed.

There is probably criticism of the Magazine Committee for printing only charts centred on Canberra.

I.P.S. do not produce DX charts for terminals other than Canberra, Melbourne and Perth. I have checked the charts to the same DX point from these three terminals and in some instances there is very little difference in the m.u.f. I will give a couple of charts on this aspect later on and much as I would wish, I am unable to help the VK4 boys here because I have not the material available to make any comparison.

Even the beam boys have not the ultimate in radiation patterns. As well as being able to switch your fixed beam or turn the rotary, there is a need to be able to move it vertically to "zero"

in on the angle the signal is arriving. My own observations have been, with disturbed propagation, a dipole can receive just as well as a beam, because the signals do not come from the same angle as under normal propagation.

V.H.F. DX-ING

Tropospheric propagation does not affect h.f. very much, but its effect can be noticed at times on 28 Mc., but more generally on 50 and 144 Mc. The best bet for v.h.f. DXers to know when this type of propagation is a possibility is to have a contact at the Met. Bureau as it is influenced by changes in temperature and humidity.

There was extreme consternation during the war on a number of radar stations located in the tropical areas when pictures, completely strange to what were expected, suddenly appeared on the screen. All sorts of major enemy activity was expected, but it was eventually traced to anomalous propagation and signals were being reflected back from land hundreds of miles outside the normal range of the radar station. This is tropical only, but v.h.f. DX.

During last sunspot maximum, predictions by F2 layer reflection reached 45 Mc. in some directions in VK, but generally v.h.f. DX is hit or miss because so many factors influence these bands. 144 Mc. is not generally affected by ionospheric reflection but is more pronounced than on 50 Mc. and range is reduced. Ionospheric bending is more prevalent on 220 Mc. and higher, but range is further reduced.

Sporadic E often assists in obtaining longer v.h.f. DX working up to 144 Mc., but it normally only occurs in summer.

V.h.f. DX working is also possible during ionospheric disturbances, the signals being affected by the intense ionisation that occurs, so you v.h.f. operators, if you know there is an ionospheric disturbance on, keep a close watch on your bands for DX.

During 1947, Radio Amateurs using 50 Mc. discovered what is now known as **Transequatorial Scatter.** By working across the magnetic equator, it was discovered this band opened up between North/South when propagation by normal means was considered impossible. JA/VK QSOs were possible by this method. This type of propagation normally occurs early in the evening.

THE CRITICAL FREQUENCY

What is the critical frequency? It is obtained by transmitting short bursts or pulses of radio energy directly upwards and having an echo returned. The I.P.S. have a special type of antenna to do this. From the result we learn two things—the height of the reflecting layer and the frequency at which there is no reflection, that is, the signal passes right through and there is no reflection. This frequency is known as the "critical" frequency and is obtained by varying the transmitted signal across a band of frequencies until one is no longer returned. Critical frequencies are highest during sunspot maximum and lowest during sunspot minimum. Except in winter, the F1 critical frequency varies much the same as the E layer. In summer a heating effect takes place in the F2 layer and F2 critical frequencies at night are much higher than in winter, hence the reason for better night DX in summer than in winter. F2 critical frequencies are generally higher in the Asiatic and Australian regions than in Europe and the Western Hemisphere.

IONISATION

During daylight hours, when the ultra violet radiation is strongest, the ionosphere is strongly ionised. During the hours of darkness, very little radiation reaches the ionosphere from the sun. Ionisation of the D, E and F1 layers therefore increases from a very low level at sunrise—reaches maximum at noon—then decreases towards sunset. Ionisation of the F2 layer rises steeply at sunrise. This can be observed in many charts where you see the rapid rise in the m.u.f. curve round 2000 g.m.t. Maximum ionisation occurs after the sun has reached overhead and then decreases at a slower rate. After dark, F1 and F2 layers combine.

During winter daylight hours the sun is 3 million miles closer to the earth and causes a high critical frequency. During winter hours of darkness, the critical frequency falls to a low value. There in a nutshell is why 14 Mc. and above are dead, or at any rate poor, for DX at night during winter, dependent on the state of the sunspot cycle.

The intensity of ionisation varies with latitude, being considerably greater in the equatorial regions where the sun is more directly overhead. At high latitudes, the changes in the structure of the ionised layers is quite rapid when compared with the behaviour at lower latitudes. This is particularly noticeable near the Auroral Zone.

There is direct relationship between what is called the "smoothed" sunspot number and the increases in ultra violet energy.

During low sunspot activity, reflection is confined to 14 Mc. or even lower. Ionisation not only bends a wave, it causes energy to be absorbed and each bending causes more absorption of the r.f. energy. The higher the frequency, the less absorption. Whilst absorption takes place in each layer, it occurs greatest in the D layer. As sunspot activity falls, so the absorption becomes less.

Sporadic ionisation may affect the propagation of signals either favourably or unfavourably but in any case it produces the predictability of circuits and therefore the reliability of circuits.

It may reflect frequencies which would not normally be so (14 and 21 Mc. in R.D. Contest). However, it also may blanket transmissions. Its characteristics change quickly and from day to day.

Remember in multiple hop working, your signals have also to be reflected at ground level and salt water, fresh water and varying types of ground all have different effects on bending back your signal in the direction of the ionosphere. The best spot to have your antenna installed is over salt water. Confirmation of this is the results obtained by W1BB in his 1.75 Mc. work.

Ionospheric propagation is not possible on frequencies below the a.l.f. You can use the ground wave for a certain distance depending on the frequency you are using, but in general the higher the frequency, the less the ground wave coverage. It is in this type of work power can be of great assistance.

DISRUPTION OF COMMUNICATIONS

Let us have a look at some of the things that can upset our planning to operate a certain band into a particular DX spot on a regular sked, even though the charts give the "green light".

Propagation can be disrupted by a number of causes. One is **Daylight Fadeouts** which in the polar region become polar blackouts. These daylight fadeouts cannot as yet be accurately forecast but are most likely to occur when suitable conditions, which may or may not include sunspot activity, are present on the sun. During a daylight fadeout, the **higher** frequencies are less affected—v.h.f. not at all. Your signal can be affected if it passes through daylight during any part of its journey to your DX station, even though both are in darkness.

A regular DXer can often observe the commencement of a daylight fadeout because of a hissing sound which commences on the band and slowly rises in intensity and then slowly dissipates. One of the most severe I ever heard occurred early in 1966 whilst listening on 7 Mc. and it was interesting to hear the comments of various stations interstate who were operating on the band at the time whose QSOs were interrupted.

These effects do not always show up on I.P.S. scientific data which is received from various observing stations throughout the world, and this occurred with this one.

Magnetic storms are another source of trouble. These set up intense current systems in the auroral zone by the arrival of particles from the sun. The drifts of ionisation caused by the interaction of the earth's magnetic field with these currents are observed as the ionospheric disturbance. These disturbances disrupt our bands by causing drastic **increases** in absorption and a severe decrease in the ionosphere's ability to reflect signals.

In the weekly ionospheric broadcast over VK2WI, mention is often made of solar flares. These are tremendous explosions which take place on the surface of the sun. They occur suddenly and emit vast quantities of ultraviolet energy, xrays and cosmic radiation.. Much of this abnormally high radiation reaches the D band of the ionosphere where it forms a blanket of intense absorption resulting in a fadeout and at times a complete radio blackout.

If the bombardment of the ionosphere is intense enough, its effect on both the magnetic fields of the earth and the stability of the ionosphere result in magnetic storms. During ionospheric storms, the critical frequency may be reduced by as much as 50% below normal.

Although primarily affecting the F layer, the severe storms can affect the E layer, so v.h.f. propagation is not free from this problem. A severe magnetic storm has been known to disrupt cable communications. There is much less trouble from ionospheric storms during low sunspot periods.

It has been pointed out that the disturbance is usually more severe in higher latitudes with maximum in the auroral zone, and these as a rule are the first areas affected. From Eastern Australia, the main circuit paths near these zones are to South Africa, South America and the long path to London. It is also found that paths to Eastern U.S.A., Canada and the short path to London are affected to a greater extent and at an earlier stage in the disturbance than other paths in lower latitudes or across the equator.

One interesting phenomenon which active VK DXers have observed is that DX conditions become excellent just before an ionospheric disturbance commences. By this I mean that signals are much stronger than they have been days prior to this and there have been a great deal more signals coming through than we have been hearing. The following day to this observation, the bands are worse than for many days. I have discussed this with a member of I.P.S. but no reason can be advanced why this should occur. It happens too many times to be just coincidental and I am convinced it does occur.

Too much reliance should not be placed in the WWV/WWVH broadcasts in respect of propagation advice. The information they broadcast is for conditions in the North Atlantic-North Pacific area and do not necessarily apply to VK unless there is a major upset in the ionosphere. The information obtained by I.P.S. is generally by scientific instrumentation and very often happenings which are observed by actual "on the air" operation do not show up in the information they receive from world observation reports.

Radio Amateurs can be of assistance to I.P.S. by supplying any information on abnormal behaviour of our bands, but it is essential the information be supplied as soon as practicable after the occurrence. Delay of some days defeats the object of the exercise.

PRESENTATION OF PREDICTIONS

There are probably different thoughts amongst Amateurs on how they would prefer the predictions to be presented in "A.R."

I have seen different methods of presentation in overseas magazines and, in my humble opinion, the present method used in "A.R." is the easier to read and allow you to do any transposition you may wish. One can readily see how close the m.u.f. and a.l.f. curves are to the Amateur bands and arrange his operating accordingly, and of course the S.w.l. who wishes to listen to overseas broadcasts can pick the most suitable frequency for his station.

READING THE CHARTS

In compiling the prediction charts, a distance of 3,000 Km. is used as this is considered to be the maximum distance for single hop transmission using the F2 layer. As mentioned previously, we have the day-to-day variation in the F2 layer, but the day-to-day variation in other layers is small and usually ignored in predictions. At the present time, I.P.S. produce 44 charts based on Canberra, 33 on Melbourne and 19 on

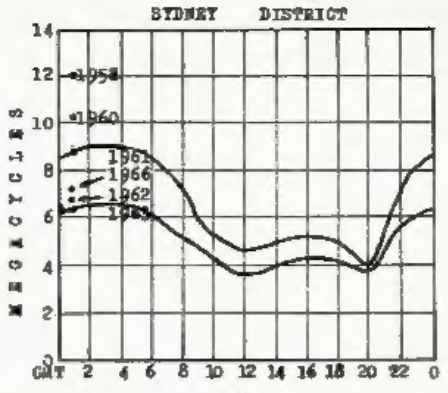


Fig 2

Perth, amongst many others, and these are being readily added to. Some of the Canberra charts have been provided at my request, the most important being the long and short paths to West Africa which have been included in the VK2 Bulletin for some years.

Do not get the idea that only long range communication is affected by the varying periods of the sunspot cycle. Fig. 2 shows a chart for the Sydney district for June and pin points the m.u.f. for six different years, not successively, but covers the last part of the old cycle and up to 1966. Two complete curves are shown but the pin point is for 0100 GMT, which is the time of the VK2WI broadcast. The minimum can be clearly seen as occurring in 1963. Much against my better judgment, the chart is prepared in E.S.T., but the point can be stressed better that way.

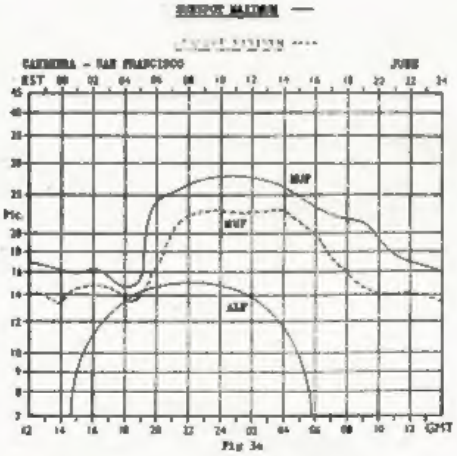


Fig 3a

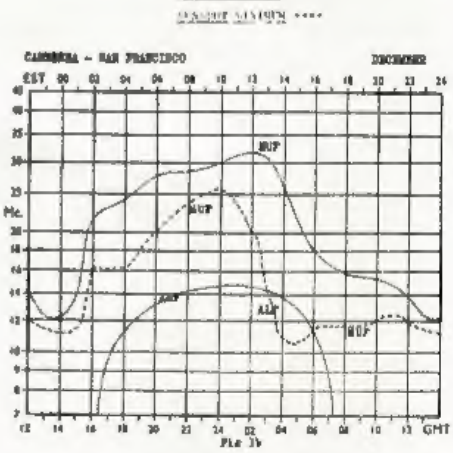


Fig 3b

At 11 a.m. in 1958 during the period of maximum sunspot activity, the m.u.f. for the Sydney district was 12 Mc., in 1960 10.5 Mc., and then in the 1963 minimum period it dropped to 6.2 Mc.

An examination of this chart will, in my opinion, very conclusively show we are in for a low sunspot maximum this cycle. How do I arrive at this conclusion you ask? From 1961 to 1963—a 2-year period—we dropped 2.6 Mc. in m.u.f. From 1963 to 1966—a 3-year period—we have only increased by 0.8 Mc. and you must remember the rise of a cycle is always faster than the fall.

This propagation of course meant during the period of low sunspot activity VK2WI broadcasts from Dural were inaudible in the Sydney area and many places beyond, but excellent signals were received on 3.5 Mc. In 1958 the reverse was the case except that 3.5 Mc. was audible but a poor signal and down in the noise level. One point to note is how the variation in the m.u.f. curves shown is much less during the hours of darkness, and very pronounced round sunrise.

Having earlier discussed propagation and all the things that can upset your operating, don't lose heart, because those conditions are not frequent, but they must always be considered. So let us now proceed with how to interpret the different DX charts under normal conditions.

Figs. 3a and 3b give the varying situation for Canberra to San Francisco for June and December during sunspot maximum and minimum, the dotted curve being the minimum part of the cycle. Notice that in June the curve during daytime is reasonably flat but in December this is not the case. Note also the curve does not peak at the same time of the day.

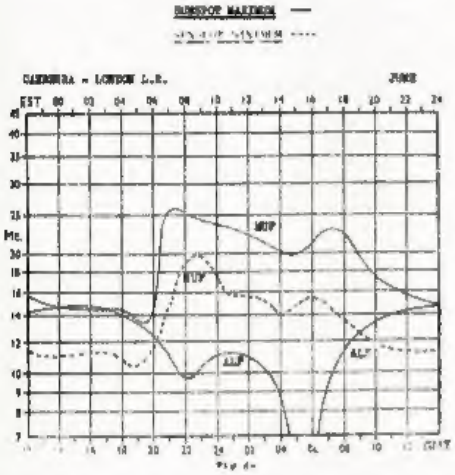
In December, the highest m.u.f. for the minimum sunspot period (dotted line) reaches 26 Mc. round 2345 GMT, whilst the peak m.u.f. for the maximum period reaches 32 Mc. round 0200 GMT. The a.l.f. exceeds 14 Mc. from 1830-0200 GMT in June and in December it happens 2130-0400 GMT.

Figs. 4a and 4b are charts for Canberra to London via long path for the same period and you will see an enormous difference in the curves for June and December both in the m.u.f. peaks and their times and the big difference in the a.l.f. curve for the different parts of the year for maximum sunspot cycle period. The a.l.f. for the December maximum period exceeds 14 Mc. from 1400-0330 GMT.

The December chart for the minimum cycle period (dotted line) is well worth a fuller examination. I will start off by saying that 21 Mc. would be open from 0900 to 1200 GMT; 14 Mc. 0900 to 1400 GMT, and 7 Mc. 0800 to 0920 GMT. How do I arrive at this?

Well I have previously said the a.l.f. exceeded 14 Mc. between 1400 and 0330 GMT. If you recall, it was previously pointed out that where the a.l.f. exceeds a particular frequency, no communication is possible on that frequency or below it by F layer reflec-

tion. You may say, "But the m.u.f. exceeds 14 Mc. with a peak at 1800 GMT." You are correct, but as the a.l.f. exceeds 14 Mc. at that time, the m.u.f. is useless—but, you could use 15 Mc. at 1800 GMT for 2 hours and 16 Mc. for probably 15 minutes whilst the curve is round 16 Mc. The a.l.f. falls below 14 Mc. at 0330 GMT so you may think that 14 Mc. would then become open as the absorption is down. This is not so as the m.u.f. at 0330 GMT is only just above 12 Mc. and therefore 14 Mc. is still unusable and the m.u.f. curve does not reach 14 Mc. until

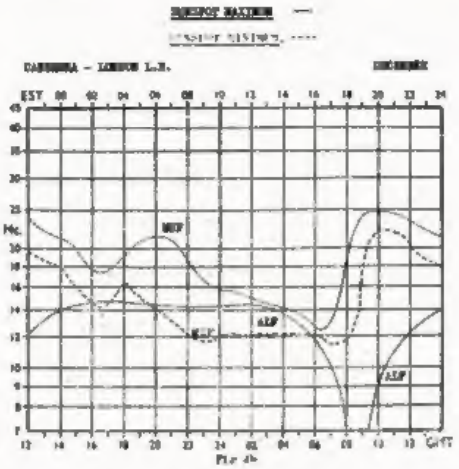


almost 0900 GMT and it rises rapidly to reach 22 Mc. at 1000 GMT, so you now have 14 and 21 Mc. open up rapidly, and the m.u.f. then slowly falls to 21 Mc. at 1200 GMT. It reaches just above 14 Mc. at 1630 GMT **but** the a.l.f. exceeds 14 Mc. from 1400 GMT. The a.l.f. continues to fall to below 7 Mc. at 0800 GMT and returns to 7 Mc. at 0930 GMT, allowing a long path opening on 7 Mc. between 0800-0930 GMT.

By looking closely at the chart, still Fig. 4b, you should be able to readily see that at 0900 GMT it is possible to use 7, 14 and 21 Mc. (use the dotted m.u.f.. curve), but for only a brief period of 15 minutes. The reason for the very brief 3-band opening is that 21 Mc. does not open until just after 0900 GMT and 7 Mc. closes at 0915. 14 Mc. will close at 1400 GMT.

On the June chart, Fig. 4a, and using the sunspot minimum (dotted curve), 7 Mc. will be open 0430-0615 GMT because the a.l.f. falls below 7 Mc. for that period and this is when the phone boys, disregarding the gentlemen's agreement, are most unpopular with the c.w. boys, because these openings do occur whilst many think 7 Mc. DX does not appear until towards sundown. 14 Mc. opens 2045-0730 GMT with a doubtful period round 0400 GMT when the m.u.f. drops to 14 Mc. and then rises again. The closest we get to a 21 Mc. opening is at 2230 GMT when the m.u.f. is just below 20 Mc.

A further indication of June and December variation is shown in Figs. 5a and 5b. Note the enormous difference in m.u.f. at 0700 GMT in June (Fig. 5a) for sunspot maximum and minimum periods. The m.u.f. for the minimum period (dotted line) is 21 Mc. whilst the maximum period the m.u.f. reached 36 Mc. Another interesting point is that at the period 1900 to almost 0400 GMT, the m.u.f. curve for sunspot minimum is **higher** than the m.u.f. for the sunspot maximum. During minimum period we get a variation of m.u.f. in the 24 hours of 9.5 Mc. at 1700 GMT to 21 Mc. at 0700 GMT—11.5 Mc., whilst for the maximum period for the 24 hours we have a variation from 9.5 Mc. at 2000 GMT to 36 Mc. at 0700 GMT—26.5 Mc. which is almost two and a half times as much as the minimum.



Looking at the chart for 7 Mc. working, we find the minimum (dotted line) period gives a 7 Mc. opening from 1330-2315 GMT and believe it or not, this is longer than 14 Mc. will be open. 14 Mc. is only open from 0400-0900 GMT. 21 Mc. may or may not open as the peak only just reaches 21 Mc. at 0700 GMT. Whether we get an opening and for how long will depend on the behaviour of the critical frequency. At no time in June does the a.l.f. reach 14 Mc. yet in December, Fig. 5b, it exceeds 14 Mc. from 0100-1145 GMT.

If you like to take a piece of transparent paper and lay it over the various charts, Figs. 3, 4 and 5, you will get some idea of what variations occur in direction, part of the cycle and time of the year. All right, let us now return to Fig. 4b.

Due to ionospheric variations, let us use a hypothetical set of circumstances in which the a.l.f. does **not** reach 14 Mc. but remains just below. This now makes a difference to our 14 Mc. opening during the minimum (dotted line) period. 14 Mc. now will be open from 0900 GMT to 2000 with a doubtful period at 1630 GMT caused by that dip in the m.u.f. to 14 Mc.

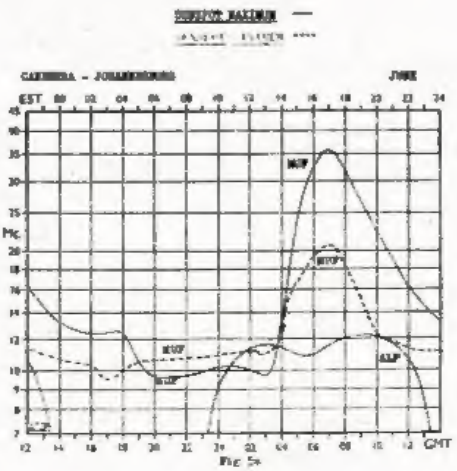
For the sunspot maximum (full line) period, the drop below 14 Mc. in the a.l.f. makes an enormous difference to 14 Mc., which now becomes open from 0715-0415 GMT, the period from 0415-0715 when the band is out is when the m.u.f. drops below 14 Mc. Let us carry the make believe a little further and assume the m.u.f. is above predictions and exceeds 14 Mc. from 0415 to 0715 GMT. So we have the a.l.f. sitting below 14 Mc. and the m.u.f. above for a full 24-hour period, and this means of course a continuous long path opening on 14 Mc. to London. **But** for part of that 24 hours, high power and high gain beaming would be necessary due to the a.l.f. being close to 14 Mc.

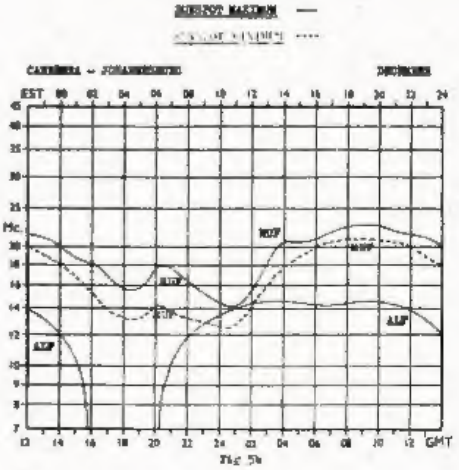
EFFECT OF LATITUDE AND LONGITUDE

With the use of Fig. 6, I hope to make the point clearer where I said that the m.u.f. varies greatly for varying latitude and longitude. Four different locations or terminals are shown, one each to North, South, East and West of Canberra. They are for the same period, and for the purpose of the exercise, they are being treated as the same distance from the Canberra terminal.

The period is for December 1965 and the four terminals are Lae, Macquarie Island, Auckland, and Perth.

Looking at the North/South chart, the a.l.f. rises above 7 Mc. at the same time, 0600 EST, and closes at 1800 EST **but** notice how the absorption is much greater on the Northern path than on the Southern. Why? Because the sun is more overhead in the North. You could work 14 Mc. to Macquarie Island (dotted line) for almost 24 hours a day because the a.l.f. does not reach 14 Mc. and the m.u.f. only falls below 14 Mc. between 0200-0430 EST. The path to Lae is an entirely different story. The a.l.f. exceeds 14 Mc. (no opening) between 0930-1400 EST. Whilst the absorption is at its peak on this circuit,





the m.u.f. reaches 31 Mc., which is 12 Mc. higher than the m.u.f. to Macquarie Island. So you can readily see the enormous variation in daytime working for your North/South path.

Now what is taking place on the East/West path? The first thing that should be apparent is the time zone difference between the two terminals, which reading from the chart is 3 hours approximately.. One could probably be excused for expecting the a.l.f. curve, allowing for the time difference, to be the same for these two terminals, but as you can see, the a.l.f. for Auckland (dotted line) does not exceed 11 Mc., the m.u.f. approximately 1 Mc. higher. With this chart you will see the a.l.f. does not drop below 10 Mc. at any time, therefore there will be no 7 Mc. opening. 14 Mc. would be open for 24 hours except for a brief period 1600-1700 GMT, when the a.l.f. and m.u.f. sit around 14 Mc. There would be two brief openings on 21 Mc. from 0001 GMT to 0400 GMT and a touch and go at 1100 GMT.

Look at the enormous transformation that has occurred for six months either side of December 1964. Here we will be very lucky if we get a 14 Mc. opening at all, because the m.u.f. just

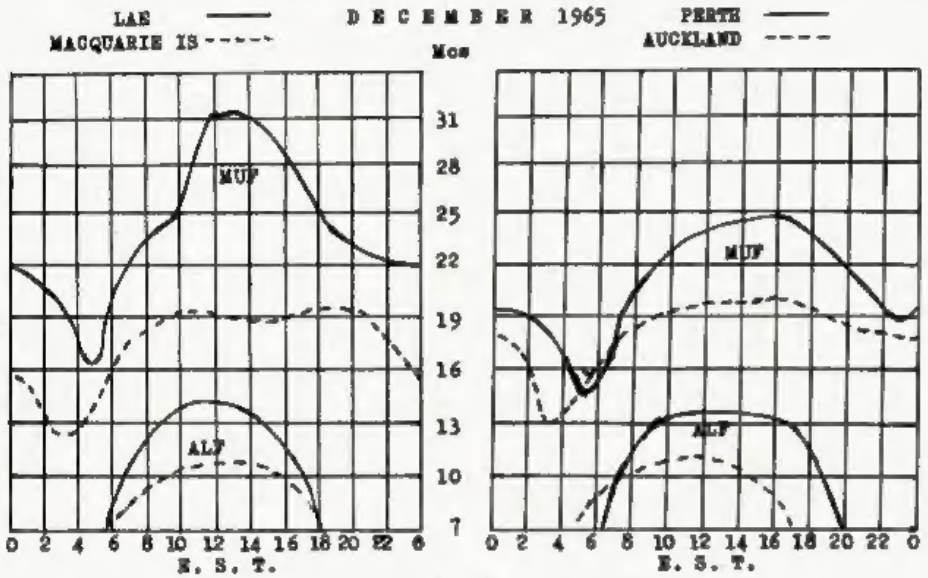


Fig. 6

whereas the one for Perth reaches 14 Mc. and of course closes 14 Mc. to Perth during that period. The m.u.f. follows a similar pattern to the a.l.f., that for Perth peaking at almost 25 Mc., whilst Auckland (dotted line) reaches 20 Mc. Another interesting point to observe is that the m.u.f. curve for Auckland is reasonably flat during the day but the one for Perth is not.

It should be fairly obvious by now that to maintain a circuit to each of these points from Canberra on the same frequency at the same time would be extremely difficult. Remember that for a satisfactory five-way QSO each must be able to hear the other and this would be almost impossible when you consider that Lae is twice as far from Macquarie Island as from Canberra and skip will be altogether different. You can give yourself an exercise and work out a time for working the other four from Canberra. My choice would be 14 Mc. at 0600 EST, hoping that the m.u.f. to Perth would not be below predictions.

RIO DE JANEIRO

Earlier I mentioned that the charts to Rio de Janeiro were often interesting and Fig. 7 shows three charts for different periods and they can be applied to other years as will be mentioned shortly.

Fig. 7a gives the chart for December 1964 and checking the charts for the same time of 1963 and 1965, I find the curve follows a similar pattern with reached 14 Mc. at 2200 GMT. In reverse we have two 7 Mc. openings, one from 0600-1100 GMT and also 1500-1730 GMT. The a.l.f. falls below 7 Mc. at these times.

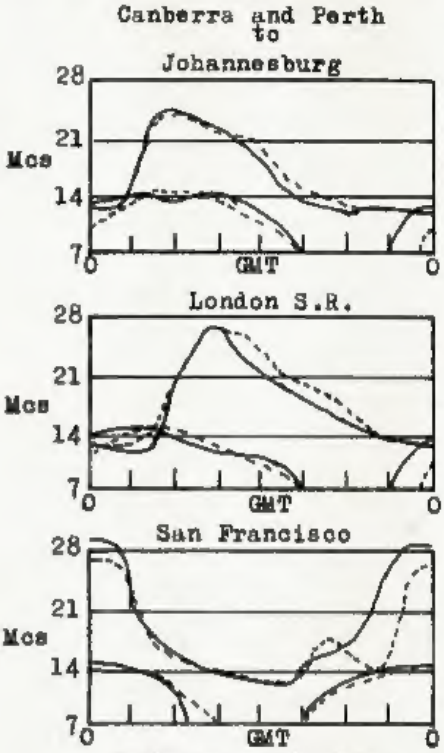
For the same period in June 1963 and 1966, the only variation is that the peak exceeds 14 Mc. and reaches 17 Mc. for three hours and we get a little longer opening on 7 Mc.

In Fig. 7c you see how variable the curve becomes in the Equinox. We lose the smooth flowing curve of the December and June period and for September 1966, there is a brief 21 Mc. opening at 2200-2300 GMT and only one 7 Mc. opening which occurs at 0700-1000 GMT. No band is open between 1200-2100 GMT.

For September 1965, the m.u.f. was 4 Mc. lower and in September 1964, 5 Mc. lower, so you see in the Equinox you get more m.u.f. variation for this circuit.

PREDICTIONS FOR OTHER PARTS OF AUSTRALIA

Although it is not very successful to show in a small scale drawing, with Fig. 8, I have attempted to show the variations that do occur in propagation for Canberra and Perth to the same terminal, and have used Johannesburg, short route to London, and San Francisco for which there is only one chart.



Canberra- Full line
Perth- Dotted line

Fig. 8

As I mentioned earlier, there is not such an enormous difference between the terminals each side of the Australian continent. To fully show this aspect, it would take many diagrams covering circuits to various DX points and different times of the year, cycle, etc. But I think you should be able to see that the VK6 boys can use the charts shown in "A.R." with some degree of certainty. The diagrams shown are all for October 1966, Canberra being the full line and Perth the dotted.

Whilst predictions for Melbourne show a very similar pattern to those for Canberra, in practice I find at times there is quite a difference in the DX working between Sydney and Melbourne.

(Continued on Page 12)

Rio de Janeiro

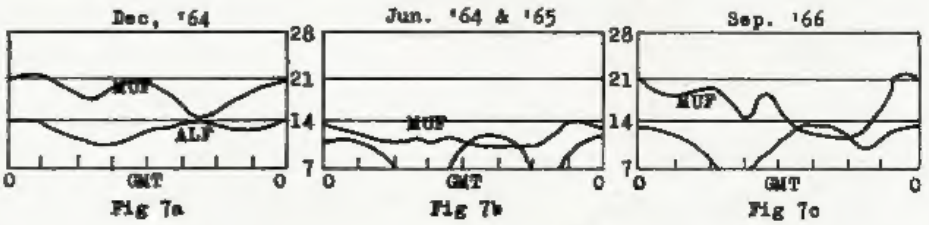


Fig 7a Fig 7b Fig 7c

5 WATTS S.S.B.—HOME-BREW WITHOUT HANGOVER

GREG JOHNSTON, B.Sc.

HAVING somewhat of an oversupply of twin triodes, five only crystals on 5327 Kc. and in anticipation of the day when I am able to convince the powers that be that I am fit to take out a call sign of my own, the "idle"(?) hands were bent towards a first rig which as the caption shows turned out to be "the thing." PanSy won't refer to me in any shape or form now!

However, levity aside, this exciter, which was first air-tested by local sidebander VK7KC, was so simple to get going with a minimum of complications in the around the filter circuitry especially, that pen was put to paper.

It is emphasised that my test equipment set-up comprises only a g.d.o., and for this project a vintage general coverage receiver capable of tuning the desired v.f.o. ranges. On air comments heard from time to time tend to indicate that many an OM has not "got with the strength" because he doubts his own ability to home-brew s.s.b. equipment and lacks the db's to buy commercial gear. Let's face it, if an s.w.l. like me can build, anyone with a ticket can.

THE FILTER

As can be seen, the filter consists of four crystals in a cascaded half lattice arrangement with a bifilar wound toroid in parallel across the two sections. Cathode follower audio input to the filter removes the need for the complications of impedance matching input inductances and makes a most worthwhile saving in terms of time and trouble while no great circuit losses are introduced. The high impedance coupling into the 6BA6 grid after the filter, although theoretically wrong, produces the desired results.

The filter was constructed on two pieces of matrix board, approximately 2" x 2" and the crystal sockets fabricated by sandwiching pins from an ancient p.t.f.e. octal socket between the two pieces of matrix. The holes already in the matrix board are very close to the spacing necessary for FT243 crystals. Normal FT243 crystal sockets were not used due to the complications they often introduce through stray capacitance, which is minimised in the suggested arrangement.

The next step was to find something to support the toroid and trimmer—an i.f. transformer (ex BC453) was used here. These i.f.t's have a very nice trimmer of about 25 pF. built into them as well as a set of four pillars of just the right height supporting them. The pillars and trimmer were retained and the rest of the i.f. scrapped. The pillars fit very neatly down the outside of the filter crystals when they are mounted on the matrix board, leaving adequate clearance over the top of the crystals to mount the toroid and trimmer.

As mentioned earlier, a set of five crystals nominally on 5327 Kc. were obtained ex surplus. Two of these were on the same frequency exactly, two others were within a couple of hundred cycles of each other about 1 Kc. higher, while the fifth was somewhere between. This last one was retained for use as a carrier crystal while the two higher ones were etched by Lee VK7KC to 2 Kc. exactly above the low frequency pair. Lee provided the gear to measure the frequency exactly and also did the measuring.

After resonating the toroid roughly to frequency (filter) with a link off the g.d.o., the filter pass band was adjusted by feeding the output from a converter through the filter into a BC454 i.f. and adjusting the filter trimmer for best sounding passband on an 80 metre s.s.b. signal. This point also coincided with best passband for s.s.b. transmission. Note, no sweep generators and such used!

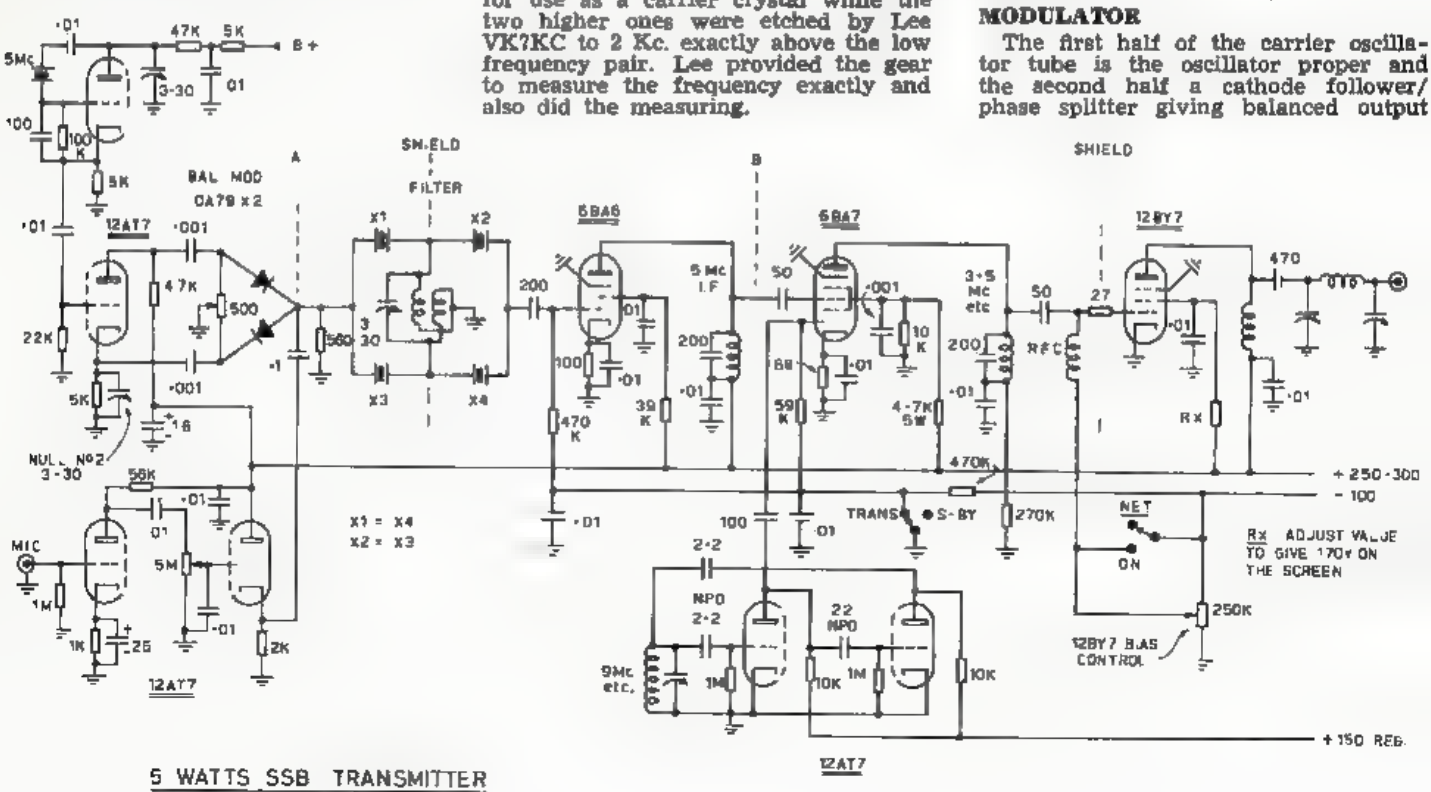
Adjustment of the carrier crystal was made by trial and error loading of the carrier crystal with pencil lead to a point just below the low frequency filter crystals. The appropriate point will be noted by monitoring the balanced modulator output in the general coverage receiver for best audio quality. I took the carrier crystal frequency too low twice before striking the correct position, but it is no trouble to scrub the pencil lead off the crystal with an old toothbrush.

SHIELDING

Under chassis shields were used in two places on the 6 x 4 inch exciter sub-chassis. One shield runs across the centre of the filter and shields the audio and carrier oscillator sections from the 6BA6, 6BA7 and filter output, while the other shield runs between the 12BY7 and the remainder of the circuit. Carrier suppression was not degraded by leaving the filter unshielded above chassis and no other peculiar effects were noted.

CARRIER OSCILLATOR, BALANCED MODULATOR

The first half of the carrier oscillator tube is the oscillator proper and the second half a cathode follower/ phase splitter giving balanced output



5 WATTS SSB TRANSMITTER

into the balanced modulator. C1 in the plate circuit of the oscillator section can be a 3-30 pF. Philips trimmer which will allow some small adjustment of carrier crystal frequency to get it right "on the nose". The Philips trimmer in the cathode circuit of the phase splitter section is adjusted for correct phase relation which will show as a distinct extra null in carrier after the balanced modulator.

The carrier balance pot. should be around 500 ohms w.w., else the carrier null adjust will be too critical. The diodes used here were OA79s matched with the multimeter for approximately equal forward and back resistance. In practice, any similar low-signal diodes will be quite adequate.

AUDIO SECTION

Three types of tube having identical base connections have been tried here and all give good results. The types tried were 12AU7, 12AV7 (EI80CC) and 12AT7. With the high output microphone used the 12AU7 gave adequate drive and the 12AT7 more than adequate. The 12AV7 gave slightly less drive than the 12AT7.

12BY7 P.A.

As shown in the circuit the design is as simple as possible. In this arrangement the tube is adjusted to run in Class AB1 with a resting plate current of 5 mA. with the bias pot. In my own exciter, —4 volts bias limits the plate current to this value when the carrier is nulled out and no audio drive applied. With tone input the plate current runs to 15 mA. with 170 volts on the screen and 300 on the plate.

With these voltages the average plate dissipation of the 12BY7 is just exceeded at 15 mA. plate current—this value is not reached on voice peaks.

The pi-network output enables the exciter to be used barefoot as a QRP rig or an exciter for a high power final.

V.F.O.

As shown, the v.f.o. is a Franklin which produces quite adequate conversion voltage from a 150 volt regulated supply with a very high order of stability and it possesses an added advantage in that a two-terminal coil is used. All condensers shown are NPO ceramic types. Once again 12AU7, 12AV7 and 12AT7 may be used interchangeably with virtually identical results.

T/R SWITCHING AND KEYING

This is very simply accomplished by grid block biasing of the 6BA6 i.f. and 6BA7 mixer, the —4 volts bias on the 12BY7 being sufficient to cut the tube off when drive is absent. A separate netting switch which applies—100 volts to the 12BY7 will prevent this tube from conducting when the main function switch is in the transmit position the signal from the 6BA7 being at an adequate level for netting purposes. C.w operation is possible by inserting carrier and grid block keying the exciter the keying circuit being placed in parallel with the T/R function switch.

TRANSCEIVER OPERATION

This has not yet been attempted, but is contemplated. The low noise front end described in an earlier article could be fed into the transmitter at point A and 5 Mc. output taken off at point B and fed into a further 5 Mc. i.f. stage. With small modification the carrier oscillator could be used as the b.f.o. for the receiver section and the v.f.o. for the conversion oscillator.

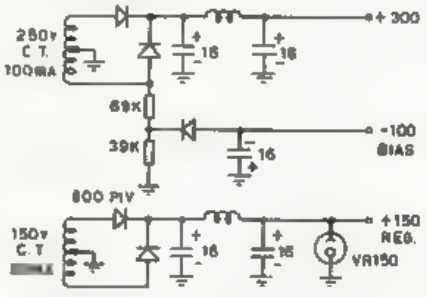
GENERAL

With the carrier crystal on the low frequency side of the filter the correct sideband is automatically selected if the v.f.o. is on the following frequencies.—

	V.f.o.	Sideband
80 Metres	8.8 Mc.	Lower
40 "	12.2 Mc.	Lower
20 "	8.8 Mc.	Upper
15 "	15.8 Mc.	Upper
10 "	22.8 Mc.	Upper

The r.f. chokes shown are 2.5 mH. receiver types and they are quite adequate in the positions shown—none of those distressing clouds of smoke having appeared as yet.

It was found very helpful to test each section of the exciter as it was wired. In my own case all wiring up to the balanced modulator output was completed and the quality, carrier null, etc., checked out on the receiver at 5 Mc. before proceeding. Successive test points thereafter were after the filter, 6BA6 plate, etc. It will be found that the single 5 Mc. i.f. winding in the 6BA6 plate is very sharp with output dropping very sharply either side of resonance—a slug tuned former (I used 24 turns on ¼ inch) is a must here.



"5 WATTS SSB" POWER SUPPLY

Alignment of the completed unit is quite simple with a dummy load such as a standard torch globe connected to the 12BY7 tank, insert carrier and tune the 6BA7 and 12BY7 plate coils for maximum plate current on the 12BY7. With the voltages mentioned and with the grid bias to the 12BY7 set at approximately —4 volts, the plate current at 3.5 Mc. should be around 12 mA. The peak should be sharp and at this stage the dummy load lamp almost burning out.

On nulling the carrier, the dummy load will extinguish before the maximum plate current null is observed so the carrier balance is set to a point where minimum plate current (about 5 mA.) is flowing without audio drive. Having reached this point, final carrier nulling is best performed by switching to the net position and monitoring the precise point of best carrier suppression on the receiver as it will be found that the plate current meter lacks adequate sensitivity for final adjustment.

At this stage things should be ready for final testing. Switch to transmit, make a noise like "one, two, three" or similar with the stage before the mike and see if the plate meter kicks and the p-lamp dummy load lights up on modulation. If this happens OK, then zero beat what carrier remains (with r.f. and i.f. gains backed off) on the receiver set to s.s.b. receive condition —you should be able to resolve the duck talk easily. If you can't, and the speech sounds distorted, then increase the 12BY7 operating bias gradually until a point of clear intelligibility and easy resolution is reached. Note the standing plate current at this stage as this is the appropriate value.

One note of warning, if you run the v.f.o. and 12BY7 screen off the same regulated supply, make sure it is a very stiff one, as even slight v.f.o. pulling on modulation will reduce the modulation to unintelligibility.

So far reports from on-air tests conducted by Lee VK7KC have been quite favourable, although the 2 Kc. filter bandpass may be too narrow for the hi-fi enthusiasts However, it is hoped that my novice efforts will demonstrate the results which can be achieved with some assistance, a g.d.o., multimeter, five crystals, limited brain bandpass and a bit of spare time as well as provide the small push needed to get some of the a.m. thinkers started on s.s.b. Meanwhile VK7KC gets a spare exciter and I get back to the c.w. tapes.

☆

MORE YO AWARDS

YO-25M—WORKED MERIDIAN 25

There are needed contacts with Amateur stations of the countries located on the 25th meridian:

Europe: LA, OH, UP2, UQ2, UR2, UC2, UB5, YO, LZ, SV.
Africa: 3A, 9U, TT8, ST, TL8 9Q5, 9J2 (VQ2 , ZE, ZS1, 2, 4, 5, 6.

Class III., 6 contacts with 6 countries; Class II., 12 with 12, Class I., 18 with 18. One contact with each country. A YO contact is obligatory in all cases. Valid contacts after 1/1/60.

YO-40 BY 40—WORKED 40 YO ON 40 MX

There are needed 40 two-way contacts with 40 YO stations on 40 mx band (7 Mc.) after 1/1/60. A YO station may be worked but once.

YO-45P—WORKED PARALLEL 45

There are needed contacts with Amateur stations of the countries located on the 45th parallel

N.A.: W7, W0, W9, W8, VE3, W1, VE1, FP8,
E. F, I, YU, YO, UB5. UA1, 3, 4, 6.
A. UL7, UI8, JT1, BY-BV, UA0, JA.

Class III., 6 contacts with 6 countries; Class II 12 with 12. Class I., 18 with 18. One contact with each country. A YO contact is obligatory in all cases. Valid contacts after 1/1/60.

YO-80 BY 80—WORKED 80 YO ON 80 MX

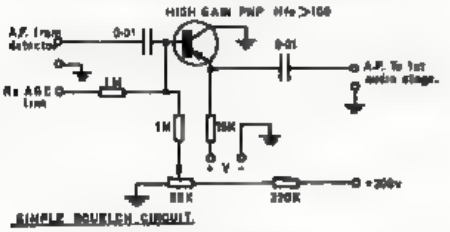
There are needed 80 two-way contacts with 80 YO stations on 80 mx band (3.5 Mc.) after 1/1/58. A YO station may be worked but once.

YO-100—WORKED 100 YO ON ALL BANDS

There are needed 100 two-way contacts with 100 different YO stations made on one, or several Ham bands, after 1/1/60. A YO station may be worked but once. DX stations may work the same YO station, but on different bands.

SIMPLE SQUELCH CIRCUIT

This circuit should be of interest to those who want to listen on a net frequency without the annoyance of a continuous background hiss. Only one transistor and a few resistors and capacitors are used, enabling this circuit to be fitted to an existing receiver without occupying too much space.



SIMPLE SQUELCH CIRCUIT.

As it stands, the circuit is most suitable for incorporating in a valve receiver. The voltage V can be obtained from the cathode of the audio output tube, or from a voltage divider off the h.t. line supplying between 5 and 15 volts.

Under no signal conditions, there is little or no voltage on the a.g.c. line and a reverse bias is obtained from the 50K potentiometer to just cut the transistor off. When a signal is present, the voltage on the a.g.c. line provides forward bias to switch the transistor on and allow the signal through the transistor. The common collector configuration provides approximately unity voltage gain and a high input impedance. Some distortion is introduced by the circuit, but this can be minimised by a very high gain transistor and a voltage V of 12 to 15v. (or higher, depending on the voltage rating of the transistor). This will allow the transistor to switch on at a low signal strength and allow a wide excursion of the transistor operating point without bottoming at high signal strength.

—Reprinted from West Australian V.h.f. Group News Bulletin, August 1966.

☆

Propagation of Amateur Signals

(Continued from Page 8)

SUMMARY

Those who have shown any great interest in what has been written will probably say, "But what about this, that or something else?" I can only reiterate what I said in the beginning, that this is an enormous subject, about which there is still much to be learned, and which I have left unsaid.

If there is something any Amateur would like dealt with or amplified further, let the Magazine Committee know and I am sure they would pass the request on and I will see what can be done. If it is beyond my limited knowledge, I know that the Ionospheric Prediction Service in Sydney would help where possible.

ACKNOWLEDGMENTS

The Sunspot Story printed in "CQ".
The Ionospheric Prediction Service, Sydney.

AMATEUR FREQUENCIES:

USE THEM OR LOSE THEM!

DO YOU QSL?

Or are you one of those who like to receive better than to give? A QSL, in our opinion, is a Statute of Ham Radio. It stands for a contact you have made with a new or old friend, who may live near or far. A QSL may represent a contact that you may make just once and never make again because of death, sickness or just QRM and band conditions. Some may have their QSLs on a wall of their shack, while others prefer to keep them in files, or in a scrap book. It is something to look at in the years to come, as perhaps a remembrance of some message you have handled to make a few hearts beat nearer to each other, or a contact you have spent many hours at trying to make points, or a QSO perhaps in the wee hours of the morn when you could not sleep. QSLs represent a hobby that gives young and old, all races and creeds, many hours of enjoyment. A hobby that is not just for the able bodied, but the blind and crippled as well.

Remember the new Hams just getting on the air for the first time are as pleased to receive those cards now as you were. A promise that you will have one in the next mail just to receive one yourself is a flaw in your character.

Let us all try to live up to the proverb, **"Do unto others as you would have them do unto you."**

Don't send your cards down just in a parcel all mixed up, and say to yourself someone else can do the sorting. Just think before you parcel them up by doing the following: Put your QSL sticker on the back of the card, then the Call Sign to whom you are sending it too, then the most important part is to put your cards in **"alphabetical order"**. By doing this you will be helping those people who do the work for you. Also another most important point is to print the Call Sign as some hand writing is hard to decipher.

Points to remember are:—

(1) Put your sticker on the card.
(2) Put the Call Sign on the back to whom it has to be sent to.
(3) Sort into country order
(4) Alphabetical order.
(5) Print or write clearly.

(With acknowledgment to S.A.R.L. (Durban) "CQ News Letter".)

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK3AHO	310/322	VK4HR	281/277
VK5MS	309/330	VK2JZ	259/268
VK5AB	300/314	VK3TL	241/245
VK6MK	298/315	VK2ADE	223/237
VK6RU	296/319	VK2AAK	221/225
VK4FJ	273/280	VK2APK	217/220

New Members:

VK5GX	101/101	VK6XX	110/110
VK4PX	108/109		

Amendments:

VK3SM	117/119	VK2AGH	108/118

C.W.

VK3KB	317/340	VK2AGH	276/289
VK2ADE	291/313	VK3AHQ	276/288
VK3CX	291/312	VK3NC	286/286
VK2QL	288/308	VK3ARX	261/269
VK4FJ	288/308	VK5RU	251/272
VK2EO	279/300	VK3XB	246/261

Amendments:

VK3YL	239/256	VK3KS	203/209
VK3RJ	231/244		

OPEN

VK2ADE	305/328	VK4HR	279/301
VK2AGH	305/323	VK2ACX	276/300
VK5RU	301/324	VK3ARX	270/276
VK5MK	300/317	VK3NC	267/287
VK4FJ	292/314	VK3JA	255/283
VK2VN	285/300	VK3TL	260/264

New Member:

	VK4CK	103/104	

Amendments:

VK3SG	161/165	VK4PX	143/148

AUSTRALIAN DX CENTURY CLUB AWARD

OBJECTS

1.1 This Award was created in order to stimulate interest in working DX in Australia and to give successful applicants some tangible recognition of their achievements.

1.2 This Award, to be known as the "DX Century Club" Award, will be issued to any Australian Amateur who satisfies the following conditions.

1.3 A certificate of the Award will be issued to the applicants who show proof of having contacted one hundred countries, and will be endorsed as necessary, for contacts made using only one type of emission.

REQUIREMENTS

2.1 Verifications are required from one hundred different countries as shown in the Official Countries List.

2.2 The Official Countries List will be published annually in "Amateur Radio" and will be amended from time to time as required. Should a country be deleted from the Countries List at any time, members and intending members will be credited with such country if the date of contact was before such deletion.

2.3 The commencing date for the Award is 1st January 1946. All contacts made on or after this date may be included.

OPERATION

3.1 Contacts must be made in the H.F. Band (Band 7) which extends from 3 to 30 Mc., but such contacts must only be made in the authorised Amateur Bands in Band 7.

3.2 All contacts must be two-way contacts on the same band. Cross band contacts will not be allowed.

3.3 Contacts may be made using any authorised type of emission for the band concerned.

3.4 Credit may only be claimed for contacts with stations using regularly-assigned Government call signs for the country concerned.

3.5 Contacts made with ship or aircraft stations will not be allowed, but land-mobile stations may be claimed provided their specific location at the time of contact is clearly shown on the verification.

3.6 All stations must be contacted from the same call area by the applicant, although if the call sign is subsequently changed, contacts will be allowed under the new call sign providing the applicant is still in the same call area.

3.7 All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its successor.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

4.3 Each verification submitted must show the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

4.4 A check list must accompany every application setting out the details for each claimed station in accordance with the details required in Rule 4.3.

APPLICATIONS

5.1 Applications for membership shall be addressed to the Federal Awards Manager, Box 2611W, G.P.O., Melbourne, Vic., accompanied by the verifications and the check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.

5.2 A nominal charge of 2/6, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia.

5.3 Successful applicants will be listed periodically in "Amateur Radio". Members of the D.X.C.C. wishing to have their verified country totals, over and above the one hundred necessary for membership, listed will notify these totals to the Federal Awards Manager.

5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the W.I.A. in the interpretation and application of these Rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

AUSTRALIAN V.H.F. CENTURY CLUB AWARD

OBJECTS

1.1 This Award has been created in order to stimulate interest in the V.H.F. bands in Australia, and to give successful applicants some tangible recognition of their achievements.

1.2 This Award, to be known as the "V.H.F. Century Club" Award, will be issued to any Australian Amateur who satisfies the following conditions.

1.3 Certificates of the Award will be issued to the applicants who show proof of having made one hundred contacts on the V.H.F. bands, and will be endorsed as necessary, for contacts made using only one type of emission.

REQUIREMENTS

2.1 Contacts must be made in the V.H.F. Band (Band 8) which extends from 30 to 300 Mc., but such contacts must only be made in the authorised Amateur Bands in Band 8.

2.2 In the case of the authorised bands between 30 and 100 Mc., verifications are required from one hundred different stations at least seventy of which must be Australian. The Amateur Bands 50 to 54 Mc and 56 to 60 Mc. will be counted as one band for the purposes of the Award.

2.3 In the case of the authorised Amateur Band between 100 to 200 Mc. and any authorised band between 200 to 300 Mc., verifications from one hundred different stations for each band is required.

2.4 It is possible under these rules for one applicant to receive three certificates, one for each of the authorised Amateur Bands nominated in Rules 2.2 and 2.3.

2.5 The commencing date for the Award is 1st June, 1948. All contacts made on or after this date may be included.

OPERATION

3.1 All contacts must be two-way contacts on the same band, and cross band contacts will not be allowed.

3.2 Contacts may be made using any authorised type of emission for the band concerned.

3.3 Fixed stations may contact portable/mobile stations and vice versa, but portable/mobile station applicants must make their contacts from within the same call area.

3.4 Applicants, when operating either portable/mobile or fixed, may contact the same station licensee, but may not include both contacts for the same type of endorsement.

3.5 Applicants may only count one contact for a station worked as a limited licensee with a Z call sign who is subsequently contacted as a full A.O.C.P. holder.

3.6 All stations must be contacted from the same call area by the applicant, although if the applicant's call sign is subsequently changed, contacts will be allowed under the new call sign providing the applicant is still in the same call area.

3.7 All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its successor.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

4.3 Each verification submitted must show the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

4.4 A check list must accompany every application setting out the following details:—

4.4.1 Applicant's name and call sign, and whether a member of the W.I.A. or not.

4.4.2 Band for which application is made, and whether special endorsement is involved.

4.4.3 Where applicable, the date of change of call sign and previous call sign.

4.4.4 Details of each contact as required by Rule 4.3.

4.4.5 The applicant's location at the time of each contact if portable/mobile operation is involved.

4.4.6 Any relevant details of any contact about which some doubt might exist.

APPLICATIONS

5.1 Applications for membership shall be addressed to the Federal Awards Manager, Box 2611W G.P.O., Melbourne, Vic., accompanied by the verifications and the check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.

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5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

AUSTRALIAN D.X.C.C. COUNTRIES LIST

		Phone	C.W.
AC3	Sikkim		
AC4	Tibet		
AC5	Bhutan		
AP	East Pakistan		
AP	West Pakistan		
BV (C3)	Formosa		
BY (C)	China		
CE	Chile		
CE9, KC4, LU-Z, VK0, VP8, ZL5	etc., Antarctica		
CE0A	Easter I.		
CE0X	St. Felix I.		
CE0Z	J. Fernandez Arch.		
CM, CO	Cuba		
CN2, 8, 9	Morocco		
CP	Bolivia		
CR3	Portuguese Guinea		
CR4	Cape Verde Is.		
CR5	Principe, Sao Thome		
CR6	Angola		
CR7	Mozambique		
CR8, 10	Port. Timor		
CR9	Macao		
CT1	Portugal		
CT2	Azores		
CT3	Madeira Is.		
CX	Uruguay		
DJ, DL, DM	Germany		
DU	Philippine Is.		
EA	Spain		
EA6	Balearic Is.		
EA8	Canary Is.		
EA9	Ifni		
EA9	Rio de Oro		
EA9	Spanish Morocco		
EA0	Spanish Guinea		
EI	Rep. of Ireland		
EL	Liberia		
EP, EQ	Iran		
ET2, 3, 9E	Ethiopia		
F	France		
FB8	A'dam & St. Paul Is.		
FB8	Crozet Is.		
FB8	Kerguelen Is.		
FC	Corsica		
FG7	Guadeloupe		
FH8	Comoro Is.		
FK8	New Caledonia		
FL8	Fr. Somaliland		
FM7	Martinique		
FO8	Clipperton I.		
FO8	Fr. Oceania		
FO8	Maria Theresa		
FP8	St. Pierre & Miq. Is.		
FR7 (from 25/6/60)	Glorioso I.		
FR7 (from 25/6/60)	Juan de Nova and Europa Is.		
FR7	Reunion I.		

		Phone	C.W.
FR7	Tromelin Is.		
FS7	Saint Martin		
FU8, YJ1, 8	New Hebrides		
FW8	Wallis & Futuna Is.		
FY7	Fr. Guiana & Inini		
G	England		
GC	Guernsey and Deps.		
GC	Jersey I.		
GD	Isle of Man		
GI	Northern Ireland		
GM	Scotland		
GW	Wales		
HA	Hungary		
HB	Switzerland		
HC	Ecuador		
HC8G	Galapagos Is.		
HB0 (HE)	Liechtenstein		
HH	Haiti		
HI	Dominican Rep.		
HK, 5J	Colombia		
HK0	Arch. of San Andres and Providencia		
HK0	Bajo Nuevo		
HK0	Malpelo Is.		
HL, HM	Korea		
HP	Panama		
HR	Honduras		
HS	Thailand		
HV	Vatican		
I1, IT1	Italy		
IS1	Sardinia		
JA, KA	Japan		
JT1	Mongolia		
JY	Jordan		
K, W	U.S.A.		
KA0, KG6I	Bonin & Volcano Is.		
KB6	Baker, Howland and Am. Phoenix I. (inc. Canton I.)		
KC4	Navassa I.		
KC6	Eastern Caroline Is.		
KC6	Western Caroline Is.		
KG4	Guantanamo Bay		
KG6	Guam		
KG6	Marcus I.		
KG6 (Rota, Tinian, Saipan, etc.)	Mariana Is.		
KH6	Hawaiian Is.		
KH6	Kure I.		
KJ6	Johnston I.		
KL7	Alaska		
KM6	Midway Is.		
KP4	Puerto Rico		
KP6	Palmyra Group, Jarvis I.		
KR6	Ryukyu Is.		
KS4B	Ser'na Bank & Roncad Cay		
KS4	Swan Is.		
KS6	American Samoa		
KV4	Virgin Is.		

		Phone	C.W.
KW6	Wake I.		
KX6	Marshall Is.		
KZ5	Canal Zone		
LA	Bouvet I.		
LA, JX	Jan Mayen		
LA	Norway		
LA, JW	Svalbard		
LU	Argentina		
LX	Luxembourg		
LZ	Bulgaria		
MP4B	Bahrein		
MP4Q	Qatar		
MP4D, T	Trucial Oman		
OA	Peru		
OD5	Lebanon		
OE	Austria		
OH	Finland		
OH0	Aland Is.		
OK	Czechoslovakia		
ON4	Belgium		
OX, KG1, XP	Greenland		
OY	Faeroes		
OZ	Denmark		
PA0, PI1	Netherlands		
PJ	Neth. West Indies		
PJ2M	Sint Maarten		
PX	Andorra		
PY	Brazil		
PY0	Fernando de Noronha		
PY0	St. Peter & Paul Rocks		
PY0	Trindade & Martin Vaz Is.		
PZ1	Netherlands Guiana		
SL, SM	Sweden		
SP	Poland		
ST2	Sudan		
SU	Egypt		
SV	Crete		
SV	Dodecanese		
SV	Greece		
TA	Turkey		
TF	Iceland		
TG	Guatemala		
TI	Costa Rica		
TI9	Cocos I.		
TJ (FE8)	Cameroon Rep.		
TL8 (from 13/8/60)	Cen. Afric. R.		
TN8 (from 15/8/60)	Congo Rep.		
TR8 (from 17/8/60)	Gabon Rep.		
TS (3V8)	Tunisia		
TT8 (from 11/8/60)	Chad Rep.		
TU2 (fr. 7/8/60)	Ivory Coast Rep.		
TY2 (fr. 1/8/60)	Dahomey Rep.		
TZ2 (from 20/6/60)	Mali Rep.		
UA, UV, UW1-6, UN1	Eur. R.S.F.S.R.		
UA1	Franz Josef Land		
UA2	Kaliningrad Region		
UA, UW9, 0	Asiatic R.S.F.S.R.		
UB5, UT5, UY5	Ukraine		
UC2	White Russian S.S.R.		
UD6	Azerbaijan		
UF6	Georgia		
UG6	Armenia		
UH8	Turkoman		
UI8	Uzbek		
UJ8	Tadzhik		
UL7	Kazakh		
UM8	Kirghiz		
UO5	Moldavia		
UP2	Lithuania		
UQ2	Latvia		
UR2	Estonia		
VE, VO	Canada		
VK	Australia		
VK2	Lord Howe Is.		
VK4	Willis Is.		
VK9	Christmas I.		
VK9, ZC3	Cocos Is.		
VK9	Nauru I.		
VK9	Norfolk I.		
VK9	Papua Terr.		
VK9	Terr. of New Guinea		
VK0	Heard I.		
VK0	Macquarie I.		
VP1	British Honduras		
VP2	Anguilla		
VP2	Antigua, Barbuda		
VP2	Br. Virgin Is.		
VP2	Dominica		
VP2	Grenada & Deps.		
VP2	Montserrat		
VP2	St. Kitts, Nevis		
VP2	St. Lucia		
VP2	St. Vincent & Deps.		
VP3 (see 8R)			
VP4	Trinidad & Tobago		
VP5	Turks & Caicos Is.		
VP6	Barbados		
VP7	Bahama Is.		
VP8	Falkland Is.		
VP8, LU-Z	South Georgia		
VP8, LU-Z	South Orkney Is.		
VP8, LU-Z	South Sandwich Is.		
VP8, LU-Z, CE9	Sth. Shet. Is.		
VP9	Bermuda Is.		
VQ8	Agalega & St. Brandon		
VQ8	Chagos Is.		
VQ8	Mauritius		
VQ8	Rodriguez I.		
VQ9	Aldabra Is.		
VQ9D (from 10/11/65)	Desroches		
VQ9F (fr. 10/11/65)	Farquhar Is.		
VQ9	Seychelles		
VR1 (includ. Canton Is.)	British Phoenix Is.		
VR1	Gilbert & Ellice Is., Ocean Is.		
VR2	Fiji Is.		
VR3	Fanning & Christmas Is.		
VR4	Solomon Is.		
VR5	Tonga Is.		
VR6	Pitcairn I.		
VS5	Brunei		
VS6	Hong Kong		

	Phone	C.W.
VS9A, P, S Aden and Socotra		
VS9H Kuria Muria		
VS9K Kamaran Is.		
VS9M Maldive Is.		
VS9O, MP4M Sultanate of Oman		
VU2 India		
VU Laccadive Is.		
VU Andaman & Nicobar Is.		
XE, XF Mexico		
XF4 Revilla Gigedo		
XT2 (from 5/8/60) Voltaic Rep.		
XU Cambodia		
XW8 Laos		
XZ2 Burma		
YA Afghanistan		
YI Iraq		
YK Syria		
YN, YN0 Nicaragua		
YO Roumania		
YS Salvador		
YU Yugoslavia		
YV Venezuela		
YV0 Aves I.		
ZA Albania		
ZB2 Gibraltar		
ZC6 Palestine		
ZD3 The Gambia		
ZD5 (ZS7) Swaziland		
ZD7 St. Helena		
ZD8 Ascension Is.		
ZD9 T. da Cunha and Gough Is.		
ZE Southern Rhodesia		
ZF (VP5) Cayman Is.		
ZK1 Cook Is.		
ZK1 Manihiki Is.		
ZK2 Niue		
ZL Chatham Is.		
ZL New Zealand		
ZL1 Kermadec Is.		
ZL4 Auckland and Campbell Is.		
ZM7 Tokelaus		
ZP Paraguay		
ZS1, 2, 4, 5, 6 Rep. of S. Africa		
ZS2 Prince Ed. and Marion I.		
ZS3 South-West Africa		
ZS8 (Basutoland) Lesotho		
ZS9 (Bechuanal'd) Botswana Rep.		
1M Minerva Reef		
1S Spratly Is.		
3A Monaco		
3W8, XV5 Vietnam		
4S7 (VS7) Ceylon		
4U1 I.T.U. Geneva		
4W1 Yemen		
4X4 (from 14/5/48) Israel		
5A Libya		
5B4 (ZC4) Cyprus		
5H1 (VQ1) Zanzibar		
5H3 (VQ3) Tanganyika		
5N2 (ZD2) Nigeria		
5R8 (FB8 Madagascar) Malagasy		
5T5 (from 20/6/60) Mauritania		
5U7 (from 3/8/60) Niger Rep.		
5V (F.D.) Togolese Rep.		
5W1 (ZM6) Samoa		
5X5 (VQ5) Uganda		
5Z4 (VQ4) Kenya		
6O1, 6O2 (fm. 1/7/60) Somalia R.		
6W8 (from 20/6/60) Senegal Rep.		
6Y (VP5) Jamaica		
7G1 (from 1/10/58) Rp. of Guinea		
7Q7 (ZD6, Nyasaland) Malawi		
7X (FA) Algeria		
7Z (HZ) Saudi Arabia		
8F (from 1/5/63) Indonesia		
8R (VP3 Br. Guiana) Guyana		
8Z4 Saudi Arabia-Iraq N.Z.		
8Z5 (9K3) Saudi Ar.-Kuwait N.Z.		
9A (MI) San Marino		
9G1 (from 5/3/57) Ghana		
9H1 (ZB1) Malta		
9J (VQ2, N. Rhod.) Zambia		
9K2 Kuwait		
9L1 (ZD1) Sierra Leone		
9M2 (from 16/9/63) W. Malaysia		
9M6, 9M8 (from 16/9/63) East Malaysia		
9N1 Nepal		
9Q5 (pr. OQ5-0) R. of The Congo		
9U5 (from 1/7/62) Burundi		
†9V1 (9M4, VS1) Singapore		
9X5 (from 1/7/62) Rwanda Rep.		
9Y4 (VP4) Trindad and Tobago		

†From 16/9/63 to 8/8/65 counts as West Malaysia.

"DELETED" COUNTRIES LIST

C9 (prior 1/1/64) Manchuria		
CN2 (prior 1/7/60) Tangier		
CR8 (prior 1/1/62) Goa		
ET2 (prior 14/11/62) Eritrea		
FF8 French West Africa		
FI8 (pr'r 20/7/55) Fr. Indo China		
FN (prior 1/11/54) French India		
FQ8 Fr. Equatorial Africa		
I1 (prior 1/4/57) Trieste		
I5 (prior 1/7/60) It. Somaliland		
JZ0 (pr'r 1/5/63) W. New Guinea		
PK1, 2, 3 (prior 1/5/63) Java		
PK4 (prior 1/5/63) Sumatra		
PK5 (prior 1/5/63) Borneo		
PK6 (prior 1/5/63) Celebes and Molucca Is.		
UN1 (prior 1/7/60) Kar-Fin.Rep.		
VO (prior 1/4/49) Newf./Lab.		
VQ6 (prior 1/7/60) Br. Somalil'd		
VS4 (prior 16/9/63) Sarawak		
ZC5 (pr. 16/9/63) Br. Nth. Borneo		
ZD4 (pr. 5/3/57) Gold Coast, Togo.		
9M2, VS2 (prior 16/9/63) Malaya		
9S4 (prior 1/4/57) Saar		
9U5 (from 1/7/60 to 30/6/62) Ruanda-Urundi		

SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN

This month I was to have launched into a discussion on input circuits for grounded-grid linear amplifiers, but the Magazine Committee has been overworking and underpaying its drawing-office staff so another topic has to be found for the holiday issue of the magazine. This same staff, we are told, has been doing a wonderful job on other single sideband articles, so we must be grateful for the work they have been doing towards furthering the art.

There is a question I am asked very frequently by the a.m. operators who feel they are missing out on contacts and would like to wet their feet gradually on sideband:

WHY NOT DOUBLE SIDEBAND?

It certainly looks a lot easier than single sideband. Yes, it does look easier to get going than single sideband, but there are still quite a lot of tricks to the trade, and one must not forget that the high-level double sideband transmitter must be very carefully adjusted and operated if it is not to emit unwanted products of modulation, which can be emitted at quite a high level when modulation of a high-level stage is carried out.

With screen modulated high-level balanced modulators such as, for example, a pair of 6DQ6 valves—a popular final—care must be taken to limit the modulation so that the output is linear and does not spread the width of the signal. The signal width is already double the audio frequency, as with a.m., and it is undesirable to make it any broader.

For this reason it is recommended that the double sideband should be generated at low level in a conservatively operated balanced modulator and then amplified by linear amplifiers in the same manner as in a single sideband transmitter. The best d.s.b. transmitters I have heard on the air have been of this type, without doubt, and of course, the linear amplifier section of the transmitter is already there and waiting to form part of the s.s.b. transmitter when you finally get around to doing the job properly.

Precautions which must be observed with all d.s.b. or s.s.b. transmitters are, the shielding to prevent feedback from the high power stages to the audio input and oscillator/doubler stages, careful arrangement of power supplies and regulation thereof, to prevent oscillator pulling. Of course oscillator stability is even more important, I consider, with d.s.b. than with s.s.b., as you will be operating oftener than not, in single sideband nets. Many d.s.b. stations "slide" into contacts with s.s.b. nets without being noticed in the net, especially if all members of the net are using selective s.s.b. receivers.

If the signal is stable and there is no pulling or feedback, and the modulation level is not pushed—and the audio frequency response is limited, especially the low frequency response—then most s.s.b. receivers will not know the difference and nobody in the net will even comment. But so often the d.s.b. man has not paid attention to all of these matters, since his transmitter has been rushed up in an attempt to get on "sideband" quickly, and he then gets bad reports and goes around saying rude things about those holier-than-thou sidebanders who couldn't build anything anyway, and have more money than ability, and won't talk to an honest experimenter who hasn't got pots of money. He is going straight back to a.m. or even c.w. and will never join that mob of stuck-up "voxketeers" who never knew how to rag-chew or brass pound as in the good old days—and so on. We have all heard the story over and over again. Just one more Amateur is not giving himself a chance to enjoy sideband operating properly, by not being prepared to do the job properly from the start.

The main advantages of d.s.b. are the elimination of the carrier, elimination of high-powered modulators and the heating of the shack which these cause. In mobile work the elimination of these and their drain on the battery may be well worth while. The simplicity of a mobile d.s.b. rig is quite a point, too.

There are relatively few operators, however, who stay with d.s.b. for long, and I consider that the receiving situation is partly responsible for this. A single sideband receiver is relatively tolerant of single sideband signals, as far as frequency of the inserted carrier is concerned. The signal is still intelligible from about —100 c.p.s. to +300 c.p.s., even though the person may not be recognisable since the pitch of all voice frequencies will be changed by that amount and will not, therefore, be in correct harmonic relationship to reproduce the voice with fidelity. Music sounds horrible under such conditions—ever tried it?

For a d.s.b. signal, with both sidebands being received, the inserted carrier must be set precisely between the two sidebands and remain in place if the signal is to be satisfactorily demodulated. Synchronous detectors may be used for demodulation of d.s.b. transmissions and excellent quality reception is possible—much better than a.m., in fact. If all our broadcast stations used this method of transmission, though, everybody would need to purchase synchronous receivers and this would add to the cost of millions of receivers—so the b.c. station transmits the carrier for a very good reason.

A count of the number of synchronous detectors in Amateur receivers in the world would probably not exceed the fingers on one hand, so most of our d.s.b. men must work in s.s.b. nets in the sections of the bands frequented by s.s.b. stations, but should he be like our friend above, who gets the cold shoulder for poor transmissions, he then seeks refuge with the a.m. boys. These chaps do not have very stable receivers with stable v.f.o's or b.f.o's—nor do they have single sideband selectivity, so they will not be bothered receiving these funny "double duck-talk" men whose signals are so hard to resolve. Why, the s.s.b. fellows are hard enough!—by the time you've cut back the r.f. gain or pulled off the antenna, advanced the a.f. gain, cut out the noise limiter, waited for the b.f.o. to stop drifting, and then tried to zero beat the old a.m. transmitter to the b.f.o.—the game's not worth the trouble. So our poor d.s.b. man goes back to c.w. or the potting shed.

And then there was that "beaut" QSO he was in last week with several good mannered s.s.b. men, when a very ill mannered "oaf" broke in and told him that he may be OK on the present net, but would he please remove that other up-side-down sideband which he had deposited on top of their net 4 kc. away which had been going happily for two hours before he came along with that heap of double sideband junk.

Thus go the trials and tribulations of the double sidebander, who is operating a perfectly clean and legitimate transmitter within his bands and in accordance with the terms of his licence (except that his input might even be 151 watts peak on the odd occasion).

So if you are thinking of going d.s.b. just because it looks easy and as a prelude to going s.s.b., just to get the feel of operating without a carrier, please don't let me discourage you, but be warned by the things I have just told you. Don't let rude comments deter or upset you. You'll need a hide like the rhino, to blast your way through the comments and remain on the bands whatever they say about you. These have been the experiences of a number of ex-double sidebanders, who decided to go s.s.b. and leave this batch of troubles behind them, only to have to battle through a new lot of s.s.b. troubles.

Don't forget though, that life is one long series of battles, but take my tip and remember that since life is short, avoid as many unnecessary battles as possible and go "single sideband" while you are young—so that you may enjoy it in your old age.

Finally, I trust all our sidebanders are enjoying their summer holidays, that the DX is good for 1967, and may your sunspots increase as the new year rolls along.

73 for now, Phil VK5NN.

WARBURTON FRANKI

SIDAC New Silicon Symmetrical Diode

The SIDAC is a five-layer semiconductor device (NPNPN) having two terminals, greatly simplifying a.c. control circuits. Being bi-directional, one SIDAC can replace two SCR's in conventional control systems. In addition, blocking voltages are less temperature sensitive in the SIDAC and since there is no reverse direction, voltage transients do not injure the device. Current surges also are less damaging than those encountered in SCR's as the current is not initially confined to a small area near a gate. The SIDAC is cheaper than comparable SCR's. Firing the SIDAC is simplicity itself. Either a parallel or series circuit may be used and a specially developed pulse diode is available with suitable pulse transformer.

Type K5B20: Normal a.c. (r.m.s.) Circuit Voltage, 240 r.m.s., Current capacity 5 amps.

$3.45 + S.T. 12½%

Pulse Diode, Type K2C — **78c** plus S.T. 12½%
Pulse Transformer — **$1.20** plus S.T. 12½%
Please add packing and post, 10c set.

NOTE: A Circuit is available for making a 1,000 watt Light Dimmer using K5B20, K2C, Pulse Transformer and a few Resistors and Condensers. Write or call for a copy

SILICON DIODES

IN3491: 18 amps. at 50 p.i.v. Available with either K or A to case, 75c plus S.T. 12½%.
Heat Sink Adaptors to suit, **25c** plus S.T. 12½%.

S10AR2: 1 amp. at 1,000 p.i.v.	**$1.20**	plus S.T. 12½%.
S15AR2. 1 amp. at 1,500 p.i.v.	**$2.00**	" " "
1N3193: 750 mA. at 200 p.i.v.	**40c**	" " "
1N3194: 750 mA. at 400 p.i.v.	**55c**	" " "
1N3195: 750 mA. at 600 p.i.v.	**75c**	" " "

LOUDSPEAKERS 4"

Available in 3.5, 8 or 15 ohms impedance.

$1.50 + 25% S.T.

BELPHONE INTERCOMM. SYSTEMS

Comprises two Handsets (similar P.M.G. telephone) and connecting wire Very clear reproduction. Loud bell to call.

$8.65 set (inc. batteries) + 12½% S.T.

RESISTORS

English Erie, 1 watt, ±10%. Most preferred sizes are available.

50 for $2 plus S.T. 25%. Plus pack and post 5c

DITTO ½ WATT: 50 for $1.60 plus S.T. 25 %. Plus pack and post 5c.

TRANSISTOR TRANSFORMERS

ROLA LDR 43: 4300/600 ohms c.t.

25c each + 25% S.T. plus pack and post 5c

A & E TO9 and TD5· Set of output and driver transformers. Impedance: TO9—375 c.t./3.5 ohms; TD5—3000/1300 ohms c.t.

75c pair + 25% S.T. plus pack and post 5c.

FILAMENT TRANSFORMERS

Double wound. 15 volts at 500 mA.

75c + 25% S.T. plus pack and post 10c

RECTIFIERS

Bridge type. Contact cooled. Up to 20 volts at 1.5 amp.

95c + 12½% S.T. plus pack and post 5c.

TRANSCEIVERS

Three transistors, range up to ½ mile, depending on terrain. Supplied complete ready to use with telescopic antenna and batteries.

$17.35 Set of Two + 12½% S.T.

Also 5-transistor model—
$23.50 Set of Two + 12½% S.T.

And 9-transistor model—
$53.85 Set of Two + 12½% S.T.

Small Imported Electrolytic Condensers

WHILE THEY LAST—ALL ONE PRICE

12c each or lots of 50, $5, plus S.T. 25%.
Plus pack and post 10c.

2, 5, 10, 25, 50, 100 uF. 6 v.w.
2, 5, 10, 25 uF. 12 v.w..
2, 5, 10, 30 uF. 25 v.w.
2, 5, 10, 25 uF. 50 v.w.

NEW! MINIATURE POWER SUPPLY

6, 9, 12 volts at 500 mA. Useful for transistor equipment such as tape recorders, record players, radiograms, etc. May also be used as trickle charger for car batteries.

$10 + 12½% S.T.

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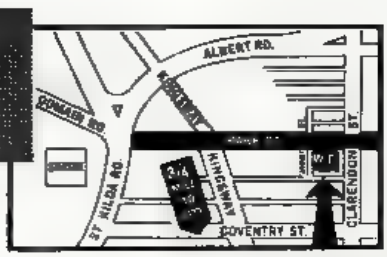

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Technical Correspondence—

SERIES PHASED ARRAY FOR 14 Mc.

Editor "A.R.," Dear Sir,

In the October 1966 issue of "A.R." there appears on page 4 an article by Wal Salmon, VK2SA, entitled "Series Phased Array for 14 Mc." Whilst I am delighted to see that at least one fellow Ham has managed to devise an antenna with which he seems pleased, as a result of reading my article in "A.R." in February 1959, I would like to point out that the title given to his article is obviously incorrect and misleading.

Sure VK2SA's antenna is a phased array possessing end fire properties, but is by no means a series phased array.

The series phased array as described in "A.R." (Feb. '59) and by other sources has folded half wave elements, spaced quarter wave, connected in series with the feed line and one another.

The gain obtainable from say a 2, 4, or more element series phased array would be practically the same as for any other 2, 4, or more plain dipole, end fire array with the same element spacing and phase relationships. But the big advantage of the series phased array is its less critical tuning and feeding, and its wider band property. It is usually only necessary to calculate the necessary dimensions, make it up, then poke it up in the air.

From remarks passed by VK2SA, I quote, "One unknown question raised in VK3ACM's article centres around the detuning effects when the antenna is pieced together and raised." I would suggest he re-reads said article, as this question was never raised.

The question I did raise, and in practice is not really relevant, was regarding the detuning effects brought about by the spacing of the two conductors comprising each folded element. Not the detuning effects between individual folded elements with various spacings. These, of course, are fixed at quarter wave. The reason for the query was that in the series phased array, as in the case of a folded dipole, we are told that the spacing between the two conductors comprising the folded element, should be negligible or small.

Naturally one assumes this means small as compared with wavelength at which they operate, but here I shall ask a silly question. How small is small?

VK2SA also stated in his article that the series phased array had not been successfully adapted for Amateur work, due to feed and phasing difficulties. This, as I have already pointed out, is not so. Feeding and phasing is so easy. The only point to remember is that the array radiates toward the feed point, not away from it.

Perhaps one reason why it has not gained much popularity, especially with the city dweller, is its small gain. A four-element array having about 6 db gain over a dipole, whilst for a 10 db. gain an array of about three wavelengths is necessary.

Gains higher than these can be obtained with 3 or 4 element yagis but of course at a price—matching difficulties, critical tuning and narrow band width.

One point that may be worth mentioning is that for a maximum back to front ratio, an even number of elements, i.e. 2, 4, 6, 8, etc., should be used, as in a backward direction the radiation between pairs is cancelled.

—Col. A. MacKenzie, VK3ACM.

[Suggest readers interested also read an article by Len Jackson.—Ed.]

PADT50 TRANSISTORS

Equipment Exchange Bulletin,
P.O. Box 177, Sandy Bay, Tas.

Editor "A.R.," Dear Sir,

We have received several requests for information about the supply and characteristics of the PADT50 transistor used in the transmitter described in the September 1966 issue of "A.R." (with important note of corrections in the October issue). I have done some research on this subject and your readers may be interested.

The characteristics of the PADT50 (made by Amperex) are given in the 1967 edition of the Techpress Transistor Specifications and Substitution Handbook, namely, germanium, PNP, power type, BV_{cbo} = 70v., P_c = 16.5w. (25°C. case temperature), I_c = 0.75a. (abs. max.), f_T = 60 (corresponding to h_{fe} = 6 at 10 Mc.).

A reasonable replacement or substitute might be the 2N2991, whose characteristics have been measured as follows: NPN, silicon, power type, BV_{cbo} = 100v. (at 100 μA.), P_c = 15w. (at 100°C. case temperature, 200°C. max.), I_c = 1a. (abs. max.), h_{FE} = 20-40 (at 500 mA., d.c.), h_{fe} = 4-6 (at 10 Mc.). These characteristics are not significantly different from those listed in the abovementioned Handbook.

It is a relatively minor matter to arrange connections for the NPN configuration of the 2N2991 (compared to the PNP PADT50), but some note should be taken that the 2N2991 is silicon, not germanium. The reverse characteristic of the silicon junction is appreciably more sensitive to voltage overload than is that of germanium. Consequently, silicon transistors will be less tolerant of transient overvoltages. Therefore they should have a higher voltage breakdown rating as margin of safety. And the amplifiers in which they are installed should be well designed to avoid overloads—and this includes parasitic oscillations! (Avoid parasitic r.f.c. combinations, keep all leads short, keep output circuits separated from input ones, etc.)

Maximum safe voltage rating is also reduced when collector current is increased and one should not overlook the fact that a collector-modulated stage will need to endure at least double the collector supply voltage. This subject is discussed in the October 1966 issue of the "Equipment Exchange Bulletin," in the Motorola Power Transistor Manual, and in the new Motorola Semiconductor Handbook. In addition, a wide range of articles on the design or construction of transistorised amateur transmitters can be found in the Amateur literature. Some of the more notable recent examples are as follows:

"Break-In" (ZL): Sept., Oct., 1966.

"CQ" (W): Jan. (April), June, 1966.

"CQ's" "Electronics Circuits Handbook" (No. 121), section 3.

Motorola Semiconductor Products Inc.: Technical Application Notes AN-107, AN-112, AN-114, AN-124.

(Probably relevant notes by Fairchild too).

"QST" (W): April 1966

R.S.G.B. Bulletin (G): March, 1965; March, July, Sept., Oct., Nov., 19[illegible]

"73" (W): April, July, Aug., Sept., 1965; Feb., July, Aug., 1966.

If you are interested in transistorised transmitters, you should make every effort to see this literature, through your library, through your local branch of the W.I.A., or through friends who subscribe. If none of these alternatives are possible, I shall offer here to provide Xerox copies of relevant articles, at cost; if interested, please send a stamped self-addressed envelope for a list of titles, etc.

In 1967 the Equipment Exchange Bulletin will publish a series of constructional articles on this subject as well as some on frequency response characteristics of transistors—if I can find the time and strength to put the articles together.

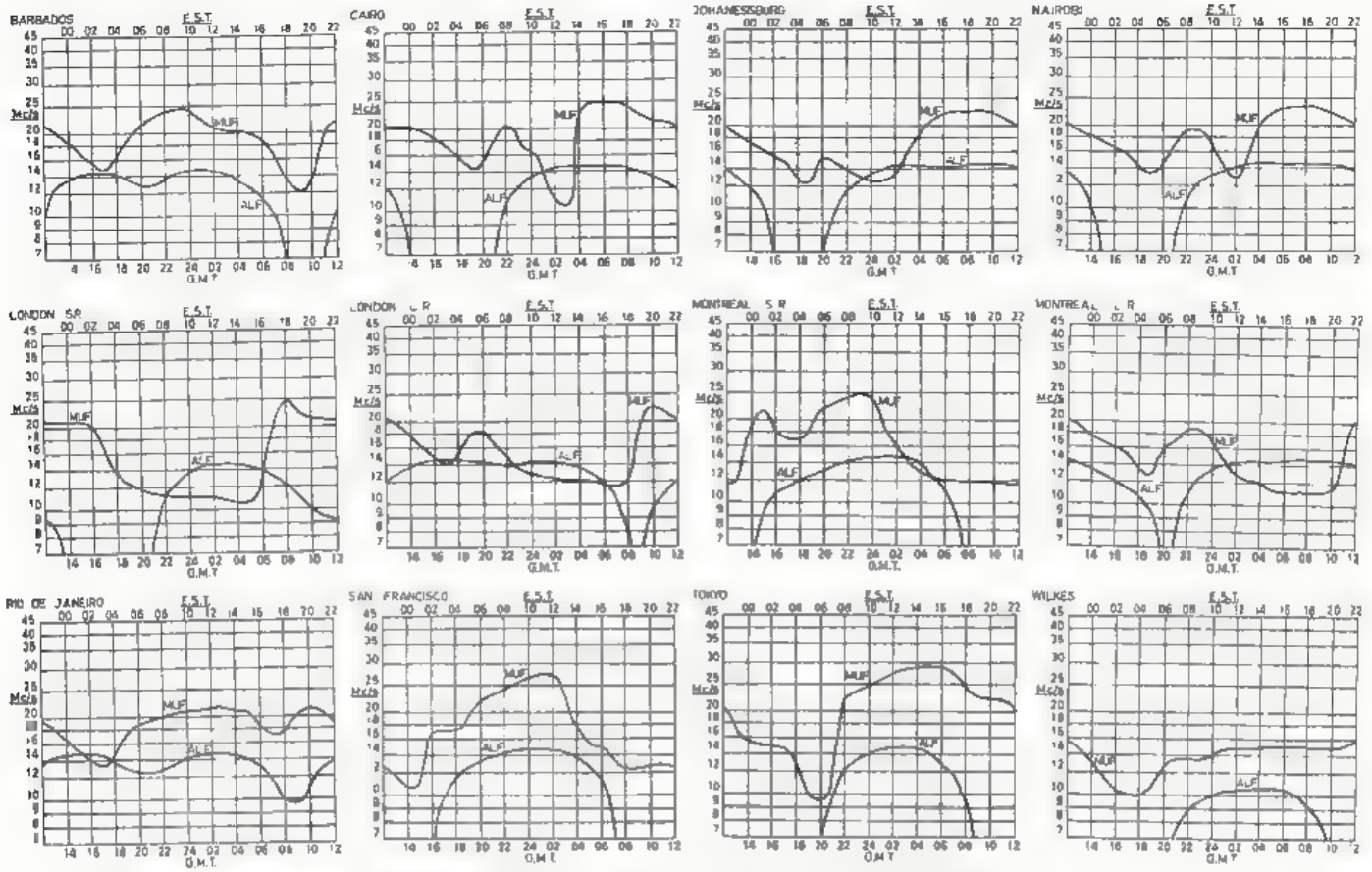
To return to my original subject, if suitable care is taken to avoid voltage transients, the 2N2991 should prove an adequate substitute for the PADT50, and by January 1967 should be available at a very much lower price from:

The Wireless Institute of Australia,
Tasmanian Division,
P.O. Box 851J,
Hobart, Tasmania.

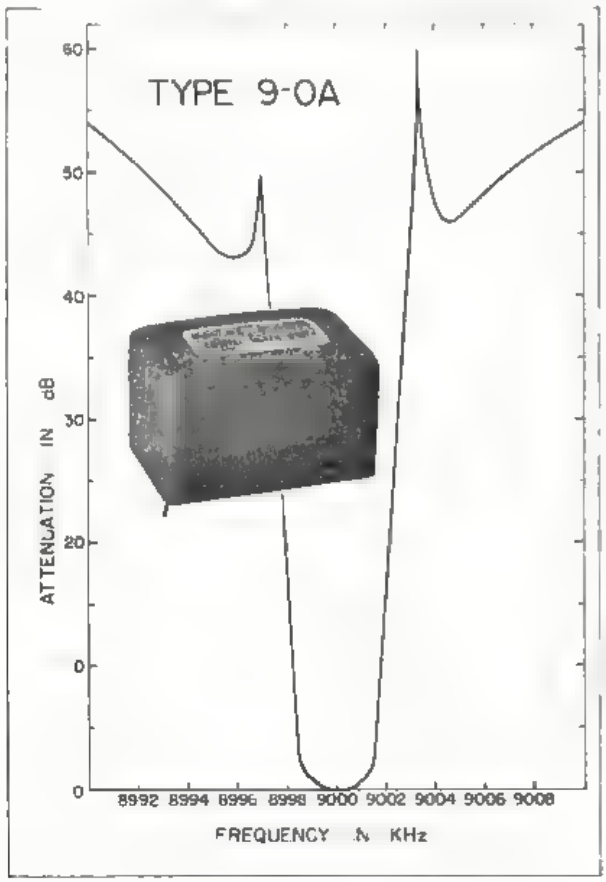
The 2N697 (NPN, Si, 2W, 30V, 100 Mc.) and other similar lower power h.f. transistors should be easy to substitute by the (relatively) inexpensive Fairchild or Anodeon lines available in Australia.

—R. L. Gunther (VK7RG), Editor.

PREDICTION CHARTS FOR JANUARY 1967



(Prediction Charts by courtesy of Ionospheric Prediction Service)



Correspondence re Federal Comment "On Growing Up"

Editor "A.R.," Dear Sir,

Referring to the Federal Secretary's comments "On Growing Up" ("A.R.," November 1966) it is apparent that F.E. has growing pains, but it appears that the direction of growth tends to be out, rather than up. It is regrettable that his theorising does not follow a practical line of thought.

Once again we have the problem, as in other Federal spheres, of a Federal body being carried away by a distorted vision of its own importance, and losing sight of the fact that its prime purpose is one of service to its members rather than vice versa.

When the pittance of 30 cents a head is multiplied by some 4000 members, this provides an income of $1,200 per annum with which F.E. can administer its complex and varied affairs, and it must be borne in mind that this sum is additional to Federal Convention expenses, I.T.U. expenses, and F.E's generous contribution to the "Australis" project, all of which are separately borne by the Divisions. Nor is "A.R." a drain on this pittance, being charged to the Divisions each month by VK3.

Whilst I whole heartedly support the proposal that it is time that the offices of Secretary and Editor cease to be honorary ones, I cannot support any proposal that reverses the present position and gives F.E. control of collection of subscriptions, with return of some miserable pittance to the Divisions.

So far as this Division is concerned, of the present annual subscription of $4.50, $3.41 has been or will be paid out this year in the aforementioned Federal matters and "A.R." This leaves $1.09 per member to meet the costs of administering the various complex affairs of the Division. As a matter of fact the greater part of this amount is absorbed by meeting-room rentals and monthly magazine, but on the present basis (and any increase in subscriptions would not materially add to the available margin) there is very little more that F.E. can draw out of the Division without forcing us into involuntary liquidation.

Again, whilst the practical benefits of having a paid executive are not denied, the practicability of financing the cost by a substantial increase in subscriptions cannot be overlooked, as the law of diminishing returns would seriously effect the final amount received

—D. R. Watson, VK4DZ,
Hon. Treas., VK4 Division.

P.S.—The opinions expressed herein do not necessarily coincide with those of VK4 Council or Division, but after all for $3.41, one should be entitled to make some criticism!

FEDERAL SECRETARY'S REPLY

Editor "A.R.," Dear Sir,

Mr Watson kindly forwarded a copy of his letter and I should like to clarify one or two points and expand some others In passing, apparently other members of the W.I.A. do not appear to be concerned as to how the "see" the Institute—silence could be taken as tacit approval of Editorial Comment!

It would seem that VK4DZ himself has become a victim of the paralysing "parochialism virus" probably carried up on some of those southerlies that blow from time to time. I often wonder if Divisional Councils have ever taken time to discuss the scope and responsibilities of the Federal body. If they did, there would probably be six different interpretations.

Basking in blissful ignorance then, it is not unnatural for the general attitude of the Divisions to be "we're all right Jack." It must be admitted that part of the blame for this ignorance could be laid at the feet of the Federal body—public relations work has been lacking in continuity over the years and it is this sort of omission that should be corrected by constitutional reform

Mr. Watson can be forgiven for misconstruing the aspirations of the Federal body: November's Federal Comment is designed to provide more of the very thing that Mr. Watson wants; that is, service to members.

It is not the Federal body that has a distorted vision of its own importance, but the Divisions probably have. Once again we see the parochial outlook as Mr. Watson supports the idea of paid Federal staff yet is not prepared to trust the judgment of the Federal body. Does Mr. Watson imagine that the Institute would be dictatorial? Has he not listened to, and read of, constitutional proposals designed to guard against this sort of thing?

Divisional thought has been too long inbred, and it is my belief that the time is rife for the whole structure to be examined: The Federal body has a name but nowhere to hang it; Federal Executive is appointed by one Division and ratified by the others; this same Division publishes "A.R."; this same Division also has the highest subscription rate in order to do so.

What a screwy system!

Every member of the Institute should consider his own part and decide whether it is better to perpetuate the narrow self centred ideologies of Divisional politics, or to be big enough to work towards a financially strong and comprehensive Federal body.

In any organisation both sides must be prepared to give and take. The total amount received by F.E. for routine administrative work is approximately $1,000 per annum; this would just about pay a part-time typist and petty cash. The amount of $1,200 stated by VK4DZ is accurate enough but by no means is it anywhere sufficient.

The courses open are clear. (1) You either reread November Federal Comment and accept the principle that a strong stable Federal body is in the best interests of every Australian Amateur even if it means some financial sacrifice; or (2) You reject any semblance of unity, adopt the "U Jack" policy and, as so succinctly put by one Federal Councillor, "drawn in the sewer of" apathy and neglect.

The choice is yours.

—Peter D. Williams, VK3IZ,
Federal Secretary, W.I.A.

FIFTY AND OVER

Brr-brr, brr-brr, brr-brr. "Oh hullo Bert, is that you? This is VK3ZOM in contact with . . . I forgot, we don't need all that rigmarole over the telephone, do we? Yes, Bert, I just rang you up to say that I've got the 150 watt 6 metre rig going . . . Yes, I've been using it all the evening. It's got a 1627 in the final. Takes 9 amps. heater current at 5 volts. Yes I did have a bit of trouble getting it going. But it seems OK now. All the meters are jumping round like they should. Modulator? Well I got hold of a 100 watt p.a. system amplifier cheap and I'm using that. You ought to see everything light up when I speak into the microphone.

"Contacts? Well, no, Bert, I haven't actually had any contacts. I don't expect to, really. You've been listening on 6 metres this evening and haven't heard me? No. I didn't expect you would. No, Bert. I'm crystal locked on the net frequency all right, but that is not the point. You see, it's this t.v.i. business.

"You remember when I was on ten watts I used to get complaints from neighbours with crummy t.v. sets. Well you can't expect the manufacturers to make a decent set with a selective tuner when they can get away with something that's flat for twenty megacycles.

"Oh no, Bert, I never had any trouble with the Inspectors. They're very nice chaps and they agreed that my transmission was quite OK. But of course if enough people complain they must be right even if they're wrong if you see what I mean. It's like Sunday baking, or defending democracy. So that's why I built this new rig.

"How do I think the new rig with 150 watts is going to stop t.v.i.? Well of course the new rig by itself wouldn't help but I've always wanted to run the full legal power so when I found a way of eliminating t.v.i. at any power I thought I might as well let my hair down. You can't see how I've managed to eliminate t.v.i.? It's quite simple, really, I'm using a new gadget I've designed myself. I call it an antennersator. No Bert not an attenuator, an antennersator. What on earth is it? Well, you've heard of log periodic antennae? Well this one is made of real logs. That's right. Logs. Actually I used broom handles. It's got a loss of over 100 db in all directions, even in wet weather. Of course in the hot weather when you need the greatest possible loss to prevent t.v.i., the loss is practically infinite. It's not a very effective radiator? No that's the whole advantage. No radiation, no t.v.i.

"But actually even with this I was still managing to get out with the 150 watts until I made myself some special 75 ohm co-axial cable. Why didn't I buy some? Oh no, Bert, you can't buy this kind of cable. When I say 75 ohm cable I mean 75 ohms per foot. That's right. The centre section is resistance wire and it's 75 ohms per foot. Since the log antenna has a s.w.r. of several hundred . . . Hold on a minute, Bert, I think I can smell something burning . . .

Bert? Hullo Bert. You're still there? Sorry to keep you waiting. No nothing serious. Just the 75 ohm cable caught on fire. I guess I'll have to work out some cooling system. Maybe connect the garden hose to it and let the water drip out the top . . .

"What's the purpose of it all? Well you know what they say. 'Put the game before the prize' and 'it's better to hope than to have' and all that sort of thing. Then one shouldn't do anything to prevent the neighbours watching cowboys and gangsters killing each other. After all, we're put in the world to help others, aren't we? What are the others put in the world for? Well really, Bert, I wouldn't know. They must be here for something I suppose. Anyway, I must rush now, I'll have to get the rig going again for tomorrow night. As soon as it's working I'll phone you up and tell you all about it. Cheers."

—Roy Hartkopf.

Fairchild Announces First Australian-Made Zener Diodes

The AN7101/2/3/4/5/ and 6 series of silicon zener diodes utilise the patented Fairchild "Planar" process to achieve a stable reference voltage with low dynamic resistance, low leakage, low capacitance and high reliability.

Low cost is a major feature of these zeners, with prices as low as 35 cents.

Full data is available by writing to the Marketing Services Department, Fairchild Australia Pty. Ltd., 420 Mt. Dandenong Rd., Croydon, Vic.

DX

Sub-Editor ALAN SHAWSMITH, VK4SS
38 Whynot St., West End, Brisbane, Qld.

This will find you quite likely full of new year resolutions and the cheer that goes with them. Not a good mixture. However Amateur Radio wise maybe you're planning to go on the air. A good move as 1967 looks a promising year. DX should be like game on green pastures. There for the taking on all bands.

The Totem Pole climbers are running out of new areas or spots (call them countries if you like), but the fever and frenzy will not be allowed to subside as new DX-peditions are being planned all along the way. There's still plenty of guano rocks and coral strips as yet unspoiled by any Ham antenna and the rules and regs. can also be stretched and squeexed or modified a little to include many of these barren or exotic spots in the D.X.C.C. list.

But what is more important (and of greater overall value to Amateur Radio) is the anticipated increase of general activity, especially on the 21 and 28 Mc bands. Sunspot count by May 1968 is expected to be in excess of 100. This might recreate (for a while at least) a touch of the good old days.

Award hunting, it seems, is being pursued with more fervour than ever. Over 2,000 certificates and awards are available now to the A.R. population for various endeavours. The same can be said of this activity. Not overdone—a good thing, but to excess a very bad master.

DXing is about to assume yet another phase (in a few short years), world-wide coverage by translator satellite will unhook us from the whims of the ionosphere, making DX reliable and constant. This, you might say, will take the "bite" out of the sport. Not so, rather the reverse—the real era of challenge, adventure and romance is yet to come.

NOTES AND NEWS

Saudi Arabia: HZ1AB in Darhan is still going strong. Most operation is reported at high end s.s.b. 14 Mc. From 1200z and later.

Faeroes. Several active stations are workable in VK. OY2YL, OY8YL, OY3BB, OY7U, etc. Some piracy of OY calls is also reported.

Czech Maritime Mobile. These calls are familiar on the bands now. If you want a QSL post to Box 69, Praha, 1. Prefix is OK4—/MM.

Jan Mayen. Changed prefixes on from here are JX8CI, JX2IK. Both 14 Mc. c.w. 1300z.

Spitsbergen. Now JW instead of LA. JW8NI only resident active station as of now. 14 Mc. c.w./s.s.b.

Rio de Oro: W8WNV, Don Miller, plans to be QRV soon from here. More info elsewhere.

Falkland Is., VP8IQ and VP8HJ both active 14 c.w. around 0900 or later. Worked here.

South Georgia Is.: VP8AM, VP8HY also said to be using 14 c.w. Duration of stay not known. No other info.

(Much of the above by courtesy of VE3FXR, Ont. DX Ed. and Area. Tks Rog OM.)

Kerguelen: FB8XX originally was exclusively c.w. now he can be found on s.s.b. 14222, 1630z. Sometimes also 14114 1400-1600z.

Crozet. FB8WW also now on s.s.b. His usual times are 1200-1400 and 0400-0600z. 14203, 14210, 14255. QSL K2MGE.

Georgia: Jim UF6FE in Tbilisi on 14230 1200-1600. S.s.b op. from here is rare.

Niger Republic 5U7AC 21360 1830z (not good QTR for VK). 5U7AK 14230 2000z. Remember the 5U7 stint by Dick W0MLY a few years ago? What a pile up.

Marion Is.: ZS2MI 14190 on c.w. (yes A1 mode). Also 14110 14170 a.m., 1200-1500z, QSL ZS4OI.

Ivory Coast: TU2BD on daily 14205 0600z, QSL Box 172, Abijadian.

Andaman Is. VU2DIA says he has now started to send out his QSLs in batches to the various countries (about time).

(The above in large measure by courtesy of LIDXA., Ed. Bill Lipsky.)

Easter Is., WA2PTQ is still said to be active from this isle of images and mystery. He will QRT sometime late January so my info says. Not heard here, but said to be using 7 and 14 c.w.

Brunei: VS5JC says he too will QRT after the middle of Jan. for 9M2 prefix. Jack is to be found on 7008 after 1200z and then on 14030 approx. later still. QSL W6VA.

New Amsterdam: FB8ZZ still on 30 c.w. at 1100z. QSL to FR7ZD.

Bahrein: MP4BDF and one or two others are QRV on 14 c.w. and s.s.b. Any time after 1300z till 2100z. MP4BGH and MP4BEU 14030 [illegible].

Dakar 6W8DD heard often on 14035 approx. 0700z.

Tahiti: Hubert FO8BQ very busy on 14 c.w. QSL Box 374, Papeete.

Madiera CT3AS worked both 14 and 7 Mc. around 2000z. Listen for him on 7008 approx.

Seychelles. At the time of writing this, VQ-9TC is operating from here on 14 c.w./s.s.b. This stint could well be over by the time this reaches you. For QSL purposes I have Box 191, Seychelles or via W3 Bureau. This is unofficial.

Ruanda Gene 9X5PS has been active all this past year and still going. His fist is not easy to copy. QSL to Box 536, Sibto Kigili, Ruanda (unofficial).

Afghanistan YA1DAN 14219 1430z. On irregularly. One or two others also reported QRV.

Egypt VE6QG/SU 14220 at 1430z. Also active SU1IM 14 c.w. 2000z.

Trucial Omaa MP4TBO 14 c.w./s.s.b. 1400 and later.

Ethiopia ET3AC 14200 at 1400-1600z.

Germany: Larry DL8LT reports that QSLs for American DL4 and DL8 stations now go via #3 Sig. Batt. A.P.O., New York, 09175. (Tks Pete VK4PJ.)

ACTIVITIES

Pete VK4PJ seems to have been busy on 20, 15 and 10. Reports the following on s.s.b. Ten mx: OH8QL, UA3TU, SV1AE, HE1CB, ZC4CN, DL7AA, DJ6FN, 9V1NL, OH2TI, G3KO, G3UOF, OH1VR, MP4BBW. Mostly around 28600 kc., 1100-1200z. Fifteen mx: UI8MN, LZ1WR, DJ7CP, VS6EK, VR2EK, MP4MAW, IT1IER, ON8UH, ON4IZ, DL2EE, MP4TBO, ON5PD, EP2BQ, HB9ACQ, UC2AA, EA8HC, OE2PZL, 9V1NL, LX1DB, 4I1BU, etc. Twenty mx: ZB2AF, PJ3CD, CN8FC, VQ8AA/F, VQ-9EF, VE3PN, DL8LT, G6TA, SM7TE, G3AJM, LA1MG, VE3DDR, XE2RE, PJ4AC, YS1BB, M1B and many EUs. Best times 1300z and 2000-2200z l.p.

Dud VK4MY sneaking in a few nice ones on s.s.b. on 14 Mc. VE8QG/SU, ZC4RM, KC4USO/MM, 7X0AH, 9M6NQ, DU1BF, KX-6BV, VS9ALV, KJ6ACF, HL9KC, HL9KK, ZK1DW, HP1FR, KB6CZ, MP4TBO and EUs. FW8RC. Usual times.

Ken VK3TL sends in a larger than ever list of DX worked. Reports three new countries in the past week or two. All 14 c.w./s.s.b. CP1GF, CR9AI, CT2YA, CX3BBD, EA6BH, EI4AN, EI9Q, FH8GF, FR7ZN, FR7ZP (Glorioso), GI4LI, CG8HT, GM4FM, GW2HQ, HR-5LB/2, HC0LB, HM6HQ, HR1CR, HS4AK, IP-1AA, KS4CC (Swan), SV1BH, MP4BGD, MP-4MAW, OA6I, OH0NF, PI1J, PJ2AQ, PJ2MI, PX1IE, PX1JS, VE1AWD/SU, VE3FJZ/SU, VE8QG/SU, TA2FC, K1YCE/XV5, YA1HD, VP-1LP, VP2AZ, VP2GR, VP2VC, VP3GG, VP8FC, VP7NA, VP8HJ, VQ8BG, VQ9TC, VQ8AA/F, VP8EW, VP6RG, VP7DX, VQ8AA/A, VQ8HB, VQ9TC, VS5MH, VS9ALV, ZB2AK, ZC4JU, ZF1EP, ZK1AS, ZK1BW, 5A3TT, 5N2AAW, 5Z4CK, 7X0AH, W8GTA/8P4, 9N1BG, 6Y5GG, 6Y5VV, 6Y5DW, 9Q5HF, and more. Best QSLs received VE3FZU/SU, 1M4A, IS8WNV, HI-3RAP, 9G1FY, GC2FMV, YA1HD, 3A0DX, XW-8CA, 5U7AK. (Congrats. Ken OM—a mighty month's effort. Have you given away your regular profession?)

QTHs

VP8HJ — W2CTN
ZF1EP — W4PJG.
VP2AZ — W0NGF.
CT3YA — Yasme Foundation.
VP7DX — Box 102 Freeport, G. Bahamas.
9N1BG — VE4OX.
FH8GF — W4ECI.
K1YCE/XV5 — W4UWC.
VP3JR — W3HQO.
VP1LP — Box 41, Belize.
TA2AC — K4AMC.
FR7ZP — W4ECI.
HS4AK — Box 11, Bangkok.
VP2VC — WA4AYX.
VQ8BG — 5A3TT.
YA1HD — DJ9DK.
MP4MAW — R.S.G.B.
9Q5HF — Box 143, Lenga, via Bunia, Congo.

(Many thanks to Ken VK3TL for supplying the above.)

SUMMARY

At the introduction I mentioned DXing and awards. What of this contest situation? There are now so many it's almost a regular week-end affair. Some are all band, others invite participation on one band 160-2 mx. Any week-end contest takes up a lot of time. There are preliminary preparations to be seen to and the tedious task of writing out a long contest log after the battle is over. Then there's the chores that cry for attention and a big sleep to catch up on the past two nights' torture. Not many Hams will tackle a full week-end contest. Particularly the family man. These "scrapa" would be more popular if they were run over 24 hours only. What you can't prove in 24 you will not do in 48. The latter stint puts a handicap on the older Ham (like me!). In the latter hours it's not **ability** that is on test but simply staying power. This is where youth is served and always will be. (For me, it is pure agony.)

In conclusion, let me bring to notice a comment which appears in every Amateur Radio magazine throughout the world, at some time or other: "Let's start another D.X.C.C. Listing on a 2-3 year plan." This proposal inevitably arises in an effort to bring some equity and justice to the present set-up. The present listings could remain and continue (God knows, they've earned it and haven't I sweated too), but let's have something to encourage the young aspirants. L.I.D.X.A. runs a one-year D.X.C.C. Totem Pole, and very successful it is, too. If my memory serves me correctly, the 1965 winner was a G, who ran up some 285 countries (beat that!).

My thanks to those who have taken the trouble to write and contribute; please keep up the assistance—the column needs you. Happy hunting in 1967. 73, Al VK4SS.

VHF

Sub-Editor CYRIL MAUDE, VK3ZCK
3 Clarendon St., Avondale Heights, W.2, Vic.

Well another year has begun, the Ross Hull Memorial Contest as well under way and many of you will have good scores and some of you will only have token ones, but don't let that worry you. Make an effort this year for each and every one who has exchanged cyphers to send in his or her log sheet. Who knows, you may even win this year.

Best of DX and good luck for the new year. 73, Cyril 3ZCK.

(The VK3 notes were received too late for inclusion in this edition.)

SOME DX GUIDES

VK2 146 00, t.v. Ch. 5A 143.750.
VK3, 145.854, 53.032, t.v. Ch. 0 51.760.
VK4 53.032, 53.968, t.v. Ch. 0 51 740.
VK5 53 00, 144 8, 53.1,
VK6 52.006, 144.2, 52.656.
VK7 53.033
VK0 52 9025.
ZL: T.v. Ch. 1 50.75.

VK0CR BEACON

Rod Champness, VK3UG, left Melbourne on 29th November for Macquarie Island where, apart from his A.N.A.R.E. duties, he will be operating gear under the call VK0CR. Generally, Rod will be looking for VK contacts on 14 150 Mc. s.s.b. and other countries on 14.180 Mc. s.s.b.

By this time, Rod should have also set up a six metre beacon transmitter on 52.9025 Mc. which will transmit continuously. The rig was assembled in Melbourne following discussions with the National Antarctic Research Organisation and the W.I.A. for the purpose of investigation of auroral propagation.

The success of the project depends upon the number of stations throughout VK and ZL who are prepared to listen for the beacon. All who are interested are asked to contact either Noel VK3ZPQ at 418 Nepean Highway, Parkdale, Vic (90-4000), or Cyril VK3ZCK at 2 Claredon St., Avondale Heights, Vic. (317-7879) to obtain a supply of special log sheets and detailed information about the beacon.

Rod also intends (when time permits) to call on 6 mx at five minutes to the hour E.S.T.

All reports received will be analysed by A.N.A.R.E., so here is our chance to make another worthwhile research contribution as well as learning more of v.h.f. DX propagation

VK3 HUNTER RIVER BRANCH

50 Mc.: The DX season has begun. The band opened on Oct. 29 to VK4 and in the evening Kevin 2ZKW and Bill 2ZWM worked some of them On Nov 15 it again opened to VK4 and 4ZGJ in Townsville was worked by 2ZWM, 2ZMO and 2ZUH Later in the evening the Rockhampton and Bundaberg gang were heard. On Sunday, 20th, Barry 2ZUB heard a VK4 talking to a VK3 operating at the top end of the band (possibly around 53 Mc.—Ed.), 2ZMO then tuned up the band and heard a VK7 calling CQ; after some trouble, Mac worked the "seven"

Colin 2YJ has a beam up for this band and hopes to be on shortly George 4ZLG has been operating portable from Newcastle during his vacation and has made good use of his 6 mx gear Most of the locals have been working him, one enterprising laddy, after working his first "foreign" station, jumped into his car and drove around to George's portable QTH and swapped QSL cards. A cool change some weeks ago spoilt the DX, but the weather is now warming up so we are hoping for plenty more.

144 Mc This band has been in fair condition and a few openings to Sydney have been made use of by 2ZSG, 2ZWM, 2YJ and others. John 2ZJG has had a 5 over 5 up for some time but recently changed it for a 16 element yagi which most definitely reduced his signal at this QTH Bill 2XT, Rodney 2CN and others are active when time and toil permits. 73, Mac 2ZMO.

VICTORIA

Band conditions have been very good during the past month with good openings on both 6 and 2 mx. JAs have been heard in VK3 around 50 Mc The best DX so far this season was a four-day opening to VK7 and VK5 on two metres, the QRM at my QTH could not be described in this column.

VK3 EASTERN ZONE

The Zone has been quite active of late with good openings to VK7 (reflections from Mt. Baw Baw), VK5 and VK2, all of which were on two metres. Activity in the Zone extends up to 432 Mc. and contacts have been made with Melbourne stations. Six metres has also had its share of popularity with openings to VK4, best day to date was Oct. 29 when all States were heard. The m.u.f. has been very high at times and some very good DX has been heard and worked.

Active Gippsland stations are VKs 3ZCG 144.003 3ZSS 144.24, 3ZOZ 144.235, 3ZDP 144.003, 3ZDY 144.365, 3ZWH 144.48, 3ZDP 144.003 (s.s.b.), 3AFD 144.085. 3ZQB 144.075, and 3AWV 144.18. All these stations will be active this summer and looking for the DX type signals. 73, George 3ZCG, in Morwell

☆

YOUTH RADIO CLUBS

From now on you will have a new correspondent as I have taken over this job from Ken 1KM, who has been keeping you up to date on Y.R.S. news for the last four years. Ken has taken on a very responsible position in his school which will take up the time formerly allotted to Y.R.S. work. Congratulations, Ken, and best wishes for the future.

Any news of the various Club and Postal Groups around Australia would be appreciated and the suggestion has been made that each group appoint a publicity officer to get the news to me by the end of each month. This should consist of information about your general activities, names of those who gain the various certificates, camping trips, in fact anything at all which you thing may be of interest. The address for this is: Mrs. Mona Swinton, VK2AXS, P.O. Box 1, Kulnura, N.S.W.

Mr. Rex Black, VK3YA, our Y.R.S. Supervisor, advises that he and Mrs. Black will be going to Canada and the U.S. early in the new year for a lengthy visit and during this time will visit various school radio clubs to see how they work and will also pay special attention to the novice licensing. As we receive news from Rex, this will be duly reported in "A.R." so everyone will know the latest.

Rex has been supervisor of the Y.R.S. since he started it several years ago. The result of his magnificent effort is seen on all sides now with many clubs and postal groups in each state—all working to promote the wonderful hobby of radio among the young people. His influence is felt outside Australia as well. Thanks cannot be put into words, Rex.

Mr Dick Smith, of Sydney Teachers' College Radio Club, reports that four of their members have gained the Junior Radio Certificate and about five or six will be trying for the Elementary before the end of the year.

Alan Nutley, of Meadowbank High Radio Club, has gained third place in the receiving section of the Remembrance Day Contest.

Mr. Don Craig, of Sydney Grammar School, College St., Sydney, is now Y.R.S. registrar for N.S.W. All registrations of new clubs, re-registration of old clubs, presentation of Certificates, prizes and a host of other jobs will come under his jurisdiction from now on.

Roger Davis, VK1RD, and Susan Brown, VK2BSB, are publishing jointly a very interesting newsletter for their postal group members. This contains a lot of good information apart from general news and should be of interest to others. Anyone wishing a copy need only send Roger a s.a.s.e. plus an extra 4c stamp. This would be a very good investment. Roger has had outstanding success with his club and recently had 11 members gain the Junior Certificate with marks ranging from 76 to 85 per cent. David Brown, who gained the highest mark, was awarded the O.T.C. book prize.

Jan Oosterveen, of Singleton, VK2BJO, has started another postal group and is preparing his members for the Elementary.

I have news from Bob Wright, leader of the Bundaberg Youth Radio Club. He advises that several of his members have gone into good jobs as a direct result of their Y.R.S. training. One has been apprenticed to a local radio-t.v. service company, two are technicians-in-training to the P.M.G. Department, one went to the Department of Civil Aviation and another to the D.C.A. as a technician-in-training. This is a very fine effort, Bob, and demonstrates the importance of Y.R.S. in preparing lads for entry into the very important electronics field. Their advance information and interest in electronics must be a tremendous help and advantage to them. 73, Mona 2AXS.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

Editor "A.R.," Dear Sir,

I have just finished testing the latest lot of transistors ordered from overseas surplus suppliers and I am well and truly disgusted. I should here like to suggest to the Australian Radio Amateurs that they should exercise great caution when attempting to take advantage of "bargains" in overseas transistors. Diodes tend to be more reliable, but it is simply incredible to find the junk which is sold under the name of "transistors". In this field, as in perhaps others, you don't get something for nothing. Therefore if you are going to order these "bargains" I suggest that you order a small lot only, to see whether there is any point going further. This will also have the additional advantage of protecting you from undue loss if the supplier decides to pocket your money without sending the goods. American surplus suppliers are not always immune to this temptation. Needless to say, most of the "money back guarantee" or "satisfaction guaranteed" policies do not apply to foreign orders.

The one reasonably reliable exception to the junk-transistor experience seems to be in the supply of computer circuit boards. The components available on the boards tend to be reliable and amazingly inexpensive. The transistors are usually functional and are supposed to be rated for several hundred milliwatts, beta usually from 30 to 150 (measured at 5v., 1 mA.), BVcbo above 30v. and frequency rating from 10 Mc. (for the 033, 063 types) to 70 Mc. or more (for 015, 085 types). Even here, however, I should stress a word of caution. It is said that these transistors are of the "2N1300 series type" and that series is rated ordinarily at 150 mW., with maximum Ic of 100 mA. or better. But I have conducted a series of tests on several types of circuit board transistors and should like to suggest that these theoretical ratings be halved, for practical purposes. Furthermore, the leakage current of these germanium transistors goes up alarmingly as they heat up and heavy base bias stabilisation is absolutely necessary if collector dissipation is to exceed about 20 mW.

The one bright light in the supply of surplus is the fact that the computer board suppliers appear to be reliable and co-operative. Their names can be found in the main experimenter or amateur magazines, mostly American. But I suggest that you order reasonable quantities at a time.

—R. L. Gunther, VK7RG.

☆

CONTEST CALENDAR

Until 15th January: Ross A. Hull Memorial Trophy V.h.f. Contest.
4th/5th February: 33rd A.R.R.L. International DX Competition (Phone), 1st week-end.
4th/10th February: A.R.R.L. Novice Roundup.
11th/12th February John Moyle Memorial N.F.D. Contest.
18th/19th February: R.S.G.B. First 1.8 Mc. Contest.
18th/19th February: 33rd A.R.R.L. International DX Competition (C.w.) 1st week-end.
4th/5th March 33rd A.R.R.L. International DX Competition (Phone) 2nd week-end.
18th/19th March 33rd A.R.R.L. International DX Competition (C.w.) 2nd week-end.

SWL

Sub-Editor: D. GRANTLEY, WIA-L2023
P.O. Box 222, Penrith, N.S.W.

The prominent feature on the Amateur bands at the present time is no doubt the vastly improved conditions to be found in the higher frequency spectrum. With 10 mx so good that it has finally appeared on my rx, and 15 mx open for periods of 12 to 16 hours, it would appear that we are in for a very good time in the months to come. Thus with the three bands at their peak, the old AR7 performing moderately well, and Peter Drew and myself in the shack, one would have expected some interesting loggings last week-end (Nov 20/21). This proved to be the case, and some really good DX was logged. Prior to this particular week-end, the loggings of VQ9AA and 9X5PS had taken the score to the 300 mark. Unfortunately, despite the outstanding conditions over the week-end, Peter and I both let Don Miller's FR7 jaunt escape us. This was followed by the rare appearance of CR4 on the bands, when two of them appeared in contact with ZL—unfortunately there was no hope of logging them, thus another country got away. Anyway, if this week-end was a taste of things to come, I guess there will be many busy S.w.l's over the holiday period.

DIVISIONAL NEWS

The election of officers for the VK3 Group for the next 12 months resulted in the following. President Harry Roach, Vice-Presidents, Bob Halligan and Michael Krockmal, Secretary, Ian Woodman, Treasurer, Tom Armstrong, QSL Officer, Brian Hannan, Acting Publicity Officer, Harry Roach. The annual Christmas Party was arranged for Dec. 8, and the first meeting for 1967 will be Friday, Jan. 27. The VK3 S.w.l. Group congratulates Greg Johnston of VK7 on obtaining the highest score in the R.D. Contest for 1966, but VK3 did not miss out entirely, as the Victorian Amateur Listeners' DX Club gained the highest points in the club receiving section. This group has been formed within the VK3 listeners group by several keen listeners who concentrate entirely on Amateur band DX. The station, situated in Kew, uses a G5RV antenna and a modified CR100 receiver with space for another six receivers.

The S.w.l. Newsletter, "Zero Beat," is issued six times per year and is attempting to cater for all tastes in short wave listening. Subscription is 60 cents per annum posted, and can be obtained by contacting the Editor, "Zero Beat," Box 52, Caulfield South, S.E.5, Vic. Members are reminded of the constructional night on 10th Feb., and the general meeting on Feb. 24.

VK3 News I have been criticised for my rare inclusion of notes from this Division and would like to comment here that I rarely get any official information from the meetings. The officials concerned are welcome to send notes to my QTH and such notes will be included, however I do live over 70 miles from the meeting QTH and cannot attend the meetings. So to those who care to criticise, how about either picking up your own pen and sending some notes in, or appoint somebody to do this task. Otherwise my good friends . . . keep quiet.

DX NEWS

Looking for Cook Is.? **ZK1BW** shows up on odd occasions with a 5 x 9 a.m signal. CE-3PR working into ZL with a 5 x 9 s.s.b. sig., gives QTH as Apoquindo 3575, Santiago. CN-8FV asks for QSLs to W2GHK. 7X0AP working into ZL on c.w. at 2000z on 14, QSL to Box 414, Alger, Algeria. FL8HM had a good signal with his 90 watts a few days ago. His name is Hassan and manager is W7WLL.

Some up-to-the-minute DX news arrived at this QTH by air mail tape, however it contains operating times, etc., for stations which most likely will be QRT by January when you read this. But the QSL arrangements for the stations concerned are: TA1DS and TA1AV are via SM0KV. TA2BK, 2FM and 2YC are via DJ2PJ. ON5DI/LX (K2MYR) UA0YP is in Zone 23. CT2YA was the Yasme operators. SV0WL on Crete (W3CJK) and SV0WU on Rhodes, to Box 60 Rhodes. ZA2BBL is genuine, but has only a one month permit for November. His QSLs go to Box 702, Tirana. 3W8D has appeared on the bands in the latter stages of November and is genuine. CN8FF says QSL via W2GHK. 7Q7PBD gives the same QSL manager. 9M2 QSLs should go via the Bureau, Box 777, Kuala Lumpur. TA2AC has been heard at this QTH at 1800z, QSL via K4AMC. PJ2MI has been appearing with a good signal into VK2, QSL via VE2BUU.

BAND CONDITIONS

10 metres has been open on many occasions of late, when KR6s, etc., and Ws have been logged as late as 1100z, whilst ON5 (0800z), SM and OH were heard at 0700z. As well, the band has been open at 2200z during several check periods, when Ws and Pacific stations were logged. On 6 mx Mac Hilliard reports signals from VK4. DX-wise, 15 mx is good, it has been checked regularly here at periods from 1300z to 0030z, and 0500z to 1200z, and there have been signals on all occasions. But the best DX is undoubtedly on 20, particularly in the pre-dawn period when the Middle East stations are being logged quite well on the long path. As well as these, many South Africans and other exotic calls have been noted.

During this period some of the call signs logged were 5Z4JW, 5A3TW, 4X4JU, TR8AG, VQ9TC, CN8FF, 9Q5SS, VS9AJH, 9Q5PS, HK3, CR6AI, TA3AC, EP2RV, VP2AZ, VP7NA, 9Q5QC, 9X5PS, VS9ALP, VP2GLE, CT3AS, 7Z3AB, CT2YA, CN8FV (via W2GHK).

Down on 40 mx the commercials and static have played havoc, nevertheless the DX is there, including MP4s on c.w.

AROUND THE SHACK

Bob Mutton, down there in VK7, has not been doing much of late, however this is understandable for, by the time you will be reading this, he will be married. If anybody has the QSL address of 9G1ND and VE3FJZ Bob would like it, his address is 24 Springfield Ave., Moonah, Tas., or you may care to pass it on to me instead.

Bob Halligan, L3229, has had QSLs from 5W1AZ, VR2ET, VK9RH, GM3BQA and KL-7EQG, as well as hearing three new countries, 9L1HX, PY5CE and VP2KJ. (The latter is on Nevis Is. and is a certain QSL via the Flatbush Radio Club, Box 36, Flatbush Sta., Brooklyn, N.Y., 11226, U.S.A.—L2022)

Warwick L3211 has been spending quite a lot of time between study and his car, thus he has been rather inactive. New cards have arrived, these include VP1HR, 5N2AAW, YU-2NJF, T12PZ, VK0TO, KC6BW, IICXT, DL1KB, 8J2FK, UB5NO, ZC4PC, VS6AJ and TG9EP.

Over to VK5 where Ernie Luff has been chasing the DX. He has logged CP6FR, EA9NI, HI8XAL, KZ5MV, VE2BUJ/SU, U3ARTEK, ZC4CN, VP2AC, CX3CO, ZS6OT, TI2LH, KW-8BS, 9L1HX, OA0HC, FO8AS, FW8RC, 7Q7PH, 4X4BK, VU2WZ, EP2AX, 9V1ND, FL8RA and many others. His latest QSLs to hand are W4HKQ, FK8BB, VE3AQL, VK6KK, CN8MT, CN8BB, EI3S, GC3ACH, VQ8AR, VP2VV, VP-2GR and HZ1AB.

Ian Woodman, L3006, has just acquired a new Lafayette HA-63A f.m. receiver and is busily probing the ether in the 152-174 Mc. region.

L2022's activities have been covered fairly well throughout these notes, only new QSLs other than special ones for E.A.R.C. and QRP awards were KJ6CF and a VE. The latter one is of special interest for it is only the second fully completely filled out VE card I have ever received and also for the fact that he replied to my card direct and returned the C.R.C.—an action unprecedented in these circles.

OVERSEAS LISTENERS

This month we would like to greet Hugh Jenkins, a 20-year-old listener from Kincardine in Scotland. Hugh started serious listening several years ago, using a No. 19 set, but recently acquired a Lafayette HE-40, which is providing all the DX Hugh can copy. Listening conditions in GM land are good, with plenty of really outstanding DX to be heard from the European and African areas. Hugh, who is a member of the rapidly-growing I.S.W.L. tape club, uses a commercial recorder built around the B.R.S. twin track, single speed deck.

DX LADDER

Here are the final listings for 1966, showing first the number of countries confirmed, then the number heard. Eric Trebilcock 293/296. Bryan Prosser 197/241. Peter Drew 183/265. Warwick Smith 151/214. Don Grantley 145/302. Aflon Westcott 106/159. Ray Kearney 104/170. Ernie Luff 103/180. Greg Earl 103/168. These listings are for 100 confirmations or more.

That winds it up for this month and this year. Good DX, and all the best, de L2022.

FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL QSL BUREAU

Results of the 1966 Scandinavian Activity Contest (S.A.C.) show the following results: C.w. VK3APK, Phone—VK2APK 106, VK3JZ 44. Check log L3ZB.

Results of the 1966 Illinois QSO Party place the following: VK3APJ 15/8/12N, VK3RJ 8/4/2E.

Eric Trebilcock, VK3 Inwards QSL Manager, advises, I have received a bunch of QSLs back from ex VK4TE Willis Island) reiterating his previous advice that he is not the least interested in Amateur Radio any more. All QSLs for him will be returned to the senders." It is a pity that these types get to the much sought after locations and while there enjoy the fellowship that Amateur Radio offers, yet on return to home locations, are unwilling to honor the minor obligations entered into from the remote locations.

Old timers in Victoria were delighted to renew old friendships with Dan Wilkinson, ZL3AB, who visited VK again after a gap of two decades to see his mother who has amassed the total of 90 virile years. Dan, as his call sign indicates, is one of the senior Hams in ZL with over 40 years of active hamming behind him. After retirement from the Education Dept., Dan settled in New Plymouth which is at the foot of Mt. Egmont. He was tickled while here to contact ZL2BEM in his home town and learn of cold wet windy weather while in Melbourne he was "enjoying" a temperature of 102!

Jack W2CTN, of Amityville, Ld., N.Y., who acts as QSL Manager for a great number of DX stations, has forwarded a complete list of the stations he is currently handling, together with those for whom he has acted for in the past. Will be glad to supply information on application with s.a.a.s.e. to this Bureau.

No QSLs from any of the many venues activated by Don Miller in the past two years have been received at this Bureau so far.

—Ray E. Jones, VK3RJ, Manager.

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NEW SOUTH WALES

The lecture subject for the VK2 Division's November meeting had previously been announced as "Solid State R.f.," but during the month it was found that the lecturer (Mr. Ted Banstead, an A.W.A. engineer) would not be available. However, to quote one of the latest popular expressions, "not to worry"—our Education Officer (Harold 2AAH) very smartly organised a worthy substitute in Mr. Alan Morris, last year's winner of the "Best Lecture of the Year" award. The lecturer kept the large audience both awake and interested with a talk, illustrated by color slides, about the operation of aircraft from the British aircraft carrier H.M.S. "Ark Royal."

From 1961 to 1963 Mr. Morris had served aboard this vessel in various parts of the world, concluding his service with the rank of lieutenant. It is, of course, not possible to give a full report on any lecture in these notes, but we will endeavour to give a resume of the most interesting points for the benefit of those of our readers who did not have the good fortune to be present.

The main object of the lecture, said Mr. Morris, was to give an outline of what was involved in putting an aircraft into the air with sufficient speed that it flies, and how this same aircraft is recovered safely so that it may be used again and again.

Under normal circumstances an aircraft taking off with sufficient fuel and bomb-load to make it worthwhile would require a runway of at least 8,000 feet. This distance is obviously impossible in the case of a carrier, the length of the "Ark Royal," for instance, being 810 feet. (Incidentally, it weighs 53,000 tons.) To make up for the lack of runway length, a device known as a steam-powered catapult is used. It is 156 feet long and the aircraft has reached flying speed (about 140 knots) by the time it arrives at the end of the catapult. There are two of these devices in "Ark Royal" and such a peak of efficiency has been reached that an aircraft can be launched every five seconds.

For a launching, the ship turns into the wind and increases speed to 30 knots. A helicopter, complete with a party of frogmen, travels alongside during each launching, ready to rescue the crew of the aircraft should it crash into the sea.

When an aircraft is taking off while a heavy sea is running, the launching is timed for when the bow of the ship is rising, thus giving the aircraft more altitude.

As each aircraft moves under its own power onto the catapult, a large metal panel is hinged upward from the flight deck. This is known as a jet blast deflector and, as its name implies, it prevents damage along the deck from the jet engines.

One of the gadgets used to fasten the aircraft to the catapult is called a bridle. This is made of wire rope and weighs about a hundredweight. Each time an aircraft is launched the bridle is lost overboard—at a cost of 12 dollars each. As there are normally some 70 launchings a day, this may appear rather a costly waste. However, the view is held that using these bridles more than once could result in the loss of an aircraft worth several million dollars, to say nothing of the crew.

Now that we have successfully launched the plane, the problem is how to get it back on deck again in one piece. The pilot is guided back to the ship by radar, and when in sight of it he lines himself up with a visual aid on the deck known as a deck landing projector sight. The aircraft flies in over the stern of the ship, catches an arrester wire with a protruding hook, expends about 10,000 h.p. and comes to rest. If by chance something goes astray with the hook, the pilot "gives her the gun," takes off again and awaits the erection of crash barriers on the deck. These are made of nylon straps and are sufficient to halt the aircraft.

This lecture had been arranged at short notice but the subject was covered thoroughly and, as mentioned early in these notes, maintained interest throughout. Frank 3QL had charge of the vote of thanks, which was carried by acclamation.

Eleven new members were accepted into membership of the W.I.A. at the November meeting as follows: G. S. Kiernan, VK3BGK; C. E. Sims, VK3ABF, K. Brackenbury, VK-2ZKR, P. B. Fischer, VK2ZPF, R. Stacey, VK3QM, D. J. Slade, VK1DS, and the following Associates: L. J. McDicken, C. H. Wall, R. Cameron, I. B. Bowmaker, N. W. Gibson.

Silent Key: During November word was received of the passing of one of our members, J. A. (Jeff) Hodgson, VK2ASH, late of Korringal, via Wagga. One minute's silence was observed during a broadcast from VK2WI. We have not been able to learn any other details but we take this opportunity on behalf of members of extending sympathy to the bereaved family. At the beginning of the November monthly meeting a minute's silence was observed in memory of the late Don Knock, ex-VK2NO.

Following recent publicity about cards for non-members being handled by the QSL Bureau, the President (Tom 2OD) invited further discussion from the meeting. Those who read our Divisional notes in the November issue of "A.R." will remember that an invitation to attend a meeting was issued to anyone who thought they had cause for complaint about any of the Division's services.

This brought forth quite a deal of discussion but the only complaints aired were those concerning certain non-members and their attitude to the QSL Bureau. In fact, the general feeling of the meeting was not very favourable towards these individuals, some of whom apparently have no compunction about using the services of the Institute—providing the Institute foots the bill. Rather than accept the QSL Bureau's offer of handling non-members' cards on payment of a small charge, one such person in particular was continuing his anti-Institute broadcasts when in contact with DX stations.

The retiring QSL Officer (Syd 2SG) said that some non-members had even given the Division's post office box number to DX stations, but when these had been posted direct and carried the correct postage he had been in the habit of re-addressing them.

SILENT KEY

It is with deep regret that we record the passing of:

VK2ASH Jeff Hodgson.

VK3JG—John Mabbitt.

Complimentary references were made to Syd's untiring efforts on behalf of the QSL Bureau for the past seven years, and his successor (Roger 2ZIG) was introduced to the gathering.

In closing the discussion, the chairman announced that Divisional Council would continue to keep an eye on the QSL position, but in the meantime the present rules would stand.

This month is a most important one, socially, for the VK2 Division, with the annual State Convention and Zone 2 Convention both being held during Australia Day week-end, January 27-29.

The Divisional Convention will commence with the monthly meeting on the Friday evening, January 27, when we understand there will be an interesting programme for the customers. While final details have not been decided, it is quite possible that Wireless Institute Centre will be open on the Saturday afternoon for afternoon tea and eyeball QSOs. Divisional Council has decided to hold an annual dinner again this year on the Saturday evening at the Centre. In former years this event was usually a "men only" show, but it will be remembered that last year members were encouraged to make it a social night by taking their wives with them. The result was such a success that it is to be hoped even more members will fall in with the same idea on this occasion. After all, what are a couple of dollars if it means an improved atmosphere with the little lady on the Amateur Radio front. Early booking is important in order that catering arrangements can be finalised. Don't delay—book today! The Secretary (Mrs. Betty Gerdes), telephone 47-4421, or Bill Lewis, telephone 31-4867, will be pleased to take your bookings.

The annual field day on the Sunday will, as usual, take place at our transmitter site, Quarry Road, Dural. Some thought was given to changing the venue this year, but after considering alternative sites it was decided that Dural still held the advantage. This is the 10th anniversary of the opening of our Dural property so it is to be hoped everyone will put their best foot forward to make this year's field day an occasion to be remembered. We would particularly like to see as many of our country members as possible joining with us for all the events over Australia Day week-end. There will be the usual field events, while a special effort is being made for the entertainment of the ladies and children.

As mentioned earlier, the Zone 2 Convention is set down for the holiday week-end in January, and I'm sure the Zone Officer, Max VK2BMK would like to hear from intending patrons.

Other coming events which should be kept in mind are the Gosford Branch's Field Day about the middle of February, and the "do's" at both Urunga and Canberra over Easter.

The good work performed by Amateur Radio operators in times of flood and bush fire emergencies is well known to all, and from a report given to the November meeting by Stephen VK2ZSK, President of the V.h.f. Group, it would appear that a new and rather novel community service is in the offing. Orchardists in the fruit growing district of Bilpin, near Mt. Kurrajong, recently approached the VK2 Division seeking assistance in tracking down the camping ground of flying foxes. For years the orchardists have suffered heavy losses from these creatures but have not been able to locate their "home base". Members of the V.h.f. Group have taken up the challenge and at time of writing were building up small transistorised transmitters. The plan is to attach the transmitters to a few captured flying foxes, and on release it is hoped they will be tracked to their camp by receiving stations set up on high spots around the area, with the assistance of several mobile outfits. Apart from preparing the equipment it is now just a matter of waiting for the fruit to mature and the appearance of the flying foxes. We will all be keeping our fingers crossed for the success of this venture. If it works it will be because of the skill attained by the v.h.f. boys on their regular fox hunts of a slightly different kind.

The Dural Committee has received a welcome donation to the VK2WI station equipment from that well known old timer, Joe Reed, VK2JR. This is a heavy-duty block and tackle, which should be invaluable for raising and lowering masts. The W.I.C.E.N. Committee recently

acquired a 40 ft. mast so we can see Joe's donation being put to good use very shortly.

Now that the Divisional Library is a going concern for the first time in several years, it is to be hoped that members will make full use of this service, at the same time giving all concerned a fair go by keeping to the rules as regards return of books. Unfortunately there are still quite a number of gaps in the lists of several popular overseas periodicals, and the Librarian would very much like donations of these. Filling the gaps would make everyone happy, for it would be disappointing both to the Librarian and the member asking for a certain book if it were not available. Have a look at page 8 of November Bulletin and see if you can help the Library, and please note that all enquiries should be addressed to the Librarian, W.I.A., P.O. Box 154, Crows Nest, N.S.W.

Our Education Officer (Harold 2AAH) has issued a reminder about his taped lecture service. This is an excellent opportunity for clubs and other interested groups, or individuals, for that matter, to catch up with some very good lectures that Harold has on tape for your benefit. And what is worth thinking about—it's free, except for postage each way. A list of available lectures was printed in the Bulletin for April 1966, so make your choice and then drop a line to Harold, C/o. the Wireless Institute Centre. While on the subject of services, if you are after Morse tapes, Ern 2EH is the man to contact, while those interested in joining up with this year's A.O.C.P. Class should write to Cec 2IR, also C/o. Wireless Institute Centre.

In concluding this first batch of notes for 1967, may I wish all my readers a happy and prosperous new year—and if you can spare a couple of dollars, don't forget the I.T.U. Fund! 73, Ivan 2AIM.

CENTRAL COAST BRANCH

The last meeting of the Central Coast Branch was held on Friday, Nov. 18, at the Gosford School of Arts. We were very fortunate to have John Featherstone, K7JUP, of Tucson, Arizona, talk about "New Thoughts in Communication". John is mainly concerned with electronic research at the University of Sydney and also as a consultant. He was enthralled with the galloping progress of radio in its various forms and felt that we have still only touched the fringe of the possibilities. He had much praise for the work of Radio Amateurs in the experimental field and also for the capacity of Australian technicians. It was a great pleasure to listen to John for, apart from his interesting lecture, his American lingo interspersed with Australianisms was very pleasant to the ear. Many thanks John.

Our President, Lindsay 2ON, has just returned from an extensive tour of New Zealand when he met some of the voices we hear on the air. We hope to hear more about this when he has had a chance to catch up on his work.

Our Field Day will be held at Gosford on Feb. 19, 1967. We always have some interstate visitors so mark this on your calendar in case you are planning a trip this way. 73, Mona 2AX8.

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VICTORIA

EASTERN ZONE

There is still some quite good activity on the air in the Zone and different members are keeping the bands and nets occupied. Evidently quite a number of fellows in the Latrobe Valley are getting interested, some home-brewing and others letting the manufacturers do the hard work. There have been two s.w.l's sit for the L.A.O.C.P. in October, namely Albert Cash and Trevor. I trust the results have been to their liking—the more the merrier on the bands, or is it the more QRM.

The 2 mx f.m. net is quite active along the Princes Highway and some of our keen 2 mx fans such as George Francis, of Morwell (phone 43953) are always willing to help in whatever way they can to promote the present state of the Amateur art. George has been having quite good contacts into western VK3, to VK2, VK5 and VK7, so what about giving 2 metres a fly on a.m. and f.m. There are a couple of chaps in the Western Zone who will be pleased to work DX on two, Roy 3ZYG at Kaniva, and Jim (call sign unsure of) at Nhill, who are recent L.A.O.C.P. winners, as well as the old hands. If you want some DX on the v.h.f., try 6 mx, you should get some good DX. I believe that JAs have been heard in Melbourne recently, could be a really good year. 15 and 10 mx have also been extremely good and David 3DY has been giving 10 quite a bit of time, as well as 20.

The Eastern Zone net on a Friday night on 3650 Kc, at 2000 hours is being kept active, but don't forget the more the merrier, and its a chance to get to know your fellow Zone member. Sideband seems to be becoming the order of the day with quite a large number of the Zone members using this mode of operation, the exact percentages I don't know. Most appear to have commercial gear, although some are building their own. Shame on us commercial gear Amateurs? Martin 3AMV hopes to be on the air fairly soon with an s.s.b. transceiver, so should put out a good signal on the G5RV antenna.

Cliff 3AIT is still very busy on C.F.A. radio networks and when at work is head down, tail up, working on the automatic control gear at 3GI. As a result, the s.s.b. rig has had to take second place for a few months. Kell 3AEP is a very keen home-brewer and is now in the process of designing and building a completely transistorised s.s.b. transceiver. I'm not sure what power it will run, but I suspect that it will tote enough power to put a quite reasonable signal interstate by itself and much further with a linear. John 3AED is doing some experiments with d.s.b., so instead of being only able to tune one sideband we'll be able to take our pick. What about making it i.s.b. and we'll be able to take our pick of programmes.

George 3ZCG has kindly offered to take over my job of Zone correspondent. I have moved out of the Zone in fact, perhaps I'll be the Zone correspondent for Antarctica? Watch for the call sign VK0CR, the voice of Macquarie Island. I'll be active on 20 about 14150 and on 6 mx on 52.902 Mc. The latter is a beacon tx which you will have read about in "A.R." by this stage. With a little bit of luck we'll hook up on 6.

Remember, early in the new year is the Zone Convention which I believe is being held in Sale. All the best in the Zone, fellas, hope to work many of you on the air and I hope that you will give George all the help you can for the notes, particularly the h.f. news; George has his finger fairly well on the v.h.f. activity. Thanks for your notes, George. 73, Rodney 3UG.

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SOUTH AUSTRALIA

The usual author for these notes, the most read writer of this magazine, Warwick 5PS, PanSy to you, has been taken to hospital and thus lays himself open to an extra attack by the "Gawler gang" who have been asked to stand in for him. First of all we hope that he will make a complete and speedy recovery and that by the time this is being read that he will be able to make suitable reply to any slander cast in his direction. It is felt that the VK5 Council will not know how to act if Pansy's possible comments are not available!

It is wondered if the visit of Fred 3YS, as reported in a previous issue, complete with a black box that issued only s.s.b. could have contributed to this lapse, hope not, although it is understood that Warwick's XYL did suggest that he procure one of those things "and thus join the strength".

Reading the leader in November '66 "A.R.," must make most of us think deeply about the present set-up and future of our organisation, the need of which will not escape any member who stops long enough to consider the road ahead. At present, in spite of our annual subscription, the whole of the activities conducted by the W.I.A., and they are vast, are done on a "no pay" basis. Both State and Federal alike.

Just consider some State work. QSL card receipt and distribution for one. For VK5 this is a task done by George 5RX, who does a magnificent job, handling thousands of cards each year, keeping your costs down, maintaining records of your cash position with him, sorting out the cards for your collection, carting them to the meetings for distribution, mailing others, and so on. Extra to that he provides a very interesting segment for the Divisional Broadcast each Sunday. George really does his bit.

Brian 5CA, the genial editor and publisher of the S.A. Journal, is another who puts in endless time for the membership. Next time you receive your copy of the Journal, work out the effort that has gone into its preparation, printing, folding, mailing, etc., and ask whether you have offered to assist in any way. It's a mighty job that Brian and his small band of helpers do for the love of the game. Yes, Brian really does his bit.

The Sunday morning broadcast of the Division, presently in the hands of Murray 5ZQ, deserves better support. Don't leave it to him to "find the news," feed it to him. The session can only include limited coverage if the general membership don't become contributors. Murray also does his bit.

And so we could go on to Phil 5NN and his s.s.b. page for "A.R." The President and his Council and the time they spend in general administration work on our behalf, Eric 5ZEJ and his v.h.f. notes for the session, Geoff 5TY and his band of W.I.C.E.N. enthusiasts, and so on. Expand this to each Division, and add to it the more specialised work of the Federal level when it is easily seen that the amount of volunteer time expended on behalf of general membership is vast, and in the main part expended by a dedicated few.

Why are we hammering this aspect this month? In order that each member will rally to support those who are guiding us at present, that we will take more interest in the work that lays ahead, that we will try and influence all non-members to join in and at least numerically add to the weight of our voice, and that by so doing we will finish up with a strong organisation that will help Region 3 become a voice in I.A.R.U.

Finally, on this matter, don't overlook our obligation to subscribe to the I.T.U. Fund, for we must be well represented at the Conference, and this costs money. You may have already sent in your donation, if so OK, but if not, it is not too late to do so.

Divisional Council membership is subject to nomination now, you will soon receive a Journal to this effect. When you do, make it a must to do something about it, the more nominations the better, for we want to keep our Division active and progressive.

A new department recently started for the benefit of VK5 members is the "Antenna Erecting Group". This is a group of chaps who are prepared to go to the assistance of any enquiry and help in the erection and testing of an antenna. This is not limited to the help of older members, but anyone wanting help. Being experienced they will short cut and get over many hurdles not known to newcomers. Enquire from the Secretary.

Have been keeping an ear to the ground wave on 40 and 80 these last few days in the effort to secure some copy and it is a source of wonder how often you hear the same networks in operation. Tune the high end of 40 most evenings and you are sure to run across Carl 5SS, Frank 5MZ with some of their cobbers from across the border and that perpetual optimist, 5WG, who was heard exhorting the group to "look on the bright side—never grizzle, be like me, always look on the bright side." To which philosophy all Carl could say was "Gee". Spin the dial down to 7080 and I'll offer even money the frequency will be occupied by Athol 5LQ with his ancient modulation or Jack 5LN and 5BH using "the thing". Tried to get through to the other end of the drain fellows, but no go—how about turning up that r.f. gain control.

Had a few words with Ken 5IM the other teatime just as his XYL called "come and get it". Ken stayed long enough to pass some kind remarks about my signal and to say that he had been keeping his schedule with 2AXL-2AHM three times a week for the best part of two years. Followed this with a very short hook-up with Col 5RO. Was one of my most regular QSOs on 6 once but since the change to 52 Mc. Col has been missing from the band. Better scrape that 2 megs off the xtal, Col, the JAs will soon be pouring in.

Anybody work that DX-peditioner Arch 6XK? I believe he has been holidaying on Norfolk Island and took a key and a couple of dry batteries with him. How did it go Arch?

Sunday, Nov. 27, the S.A. V.h.f. Picnic was held in glorious weather at the Walnut Paddock, National Park. Earlier over the WI broadcast all and sundry were invited to rendezvous at Belair and enjoy the hospitality of the V.h.f. Group. I didn't put in an appearance till very late in the afternoon, but was made welcome and a quick count revealed 38 vehicles adorned with many and varied antenna systems. Garry 5ZK and Geoff 5TY were noticed "slumming" it with several Z types and Ross 5ZF, our worthy President, was seen surveying the scene with a very contented look on his face. Or was he merely watching the very fair examples of S.A. pulchritude as they tended the barbecues? Why is it the WI Picnics were never so well attended? What do the v.h.f'ers have that the h.f'ers haven't had longer? Don't answer that!

Heard Vern 5VB "conning" yet another one into building a quad the other night. Vern must have influenced more blokes into putting up quads than any two other Hams in S.A. But watch out Vern, my admiral, Bert 5EW out Elizabeth way has come up with a version of the modified G4ZU on an X frame that will make you look to your laurels.

What's this business of feeding an antenna with "iron ants"? Uncle Joe, 5UJ, up in Whyalla, claims wonderful results and when the s.s.b. gets teamed up with this after Christmas who knows what might happen.

That erstwhile exponent of 288, Don 5LO, made himself known the other evening on 80. Don was 3PO for a year or two and now signs

3FX. Remember that classic contact from Mallala Don, or perhaps I'd better not remind you. 50 watts to four 813s wasn't it? And a 500 ft. vertical!

John 5MX was another to say hullo on 80. I looked up the QSL John and found the date October 1949. How time gets away.

Forget who it was but one of the up-country types was telling the group about a cow he was trying to milk the other morning and was having no end of trouble. He said, "It took me ages to get him into the stall and I no sooner balled him up when he broke the leg-rope and the next thing he kicked over the bucket." It was about this time the voice of Brian 5BI broke in to say "Boy, don't you know you've got the wrong kind of cow?" How would a mere technician know?

73 from the Gawler gang—VKs 5EF, 5ZHJ and 5AX.

Nov. 22 saw the monthly W.I.A. meeting conducted as usual at the Master Builders' Centre, South Terrace. A below average attendance was present in contrast to similar previous meetings, which took the form of a trading table arranged by the W.I.A. Disposals Committee under the direction of Gilbert 5GX. Many excellent items were available from nuts and bolts to crystals, in fact you name it and it was there, well it was until someone managed to get their grubby little hands onto it. In all, a good opportunity missed by those who did not attend to stock their junk boxes.

Official business as usual was accepted in the apathetic manner that the average VK5 Amateur tends to view these matters. Unfortunately Warwick 5PS (PanSy to you) was not present to voice his opinion on any contentious issues. Nonetheless, an enthusiastic ear was given that evening to a proposal submitted by Council to the membership on the subject of insurance relating to members conducting organised Institute activities. For reasons unbeknown and not explainable, no such policy has ever been taken out. However this situation is to be remedied almost immediately following the unanimous accord given to the proposal by the members present.

With respect to this insurable safeguard, the instigator and super sleuth on the matter was none other than our genial giant, Geoff 5TY, the VK5 Federal Councillor, who incidentally during the course of business was railroaded into another term of office. Should the VK3 Constitution Committee read this, they may wish to know that Geoff aims to see a Federal Constitution signed, sealed and delivered to members before the completion of his ensuring term in office.

Geoff also presented a comprehensive report on W.I.C.E.N. activities including a commendation from the S.A. Fire Brigade for the groups' assistance in "Operation Guy Fawkes". Mention was also made of a special insurance cover to protect W.I.C.E.N. members that Geoff had managed to procure from one company. Does your right arm ever become weary Geoff? If not, what's your secret?

As usual, George 5RX was present to distribute the QSL cards and judging by the cards available, VK5 is certainly to the fore in the DX world.

On the v.h.f. scene the VK5 beacons (VK5VF) on 53.000 and 144.6 Mc. are once again operative. They were officially recommissioned at 1500 hours C.S.T. on 25/11/66. This was primarily due to the excellent work of Bob 5ZDX who contributed greatly to re-building the beacons into a new weatherproof cabinet, and then organising materials, labour, in fact the whole box and dice for the re-installation of the beacons back at the Channel 7 t.v. transmitter site.

On Saturday, 19th Nov., Bob, assisted by Eric 5ZEJ, Barry 5ZMW and Colin 5ZHJ, set about laying an electrical supply service a foot into the "terra-firma," for a distance of 50 feet. This would have been okay for the boys had the temperature not been 95 degrees. Nonetheless the job was completed with frequent breathers to quench their thirst. In addition, the antennae were erected and a concrete foundation poured to seat the beacons on. It has been reported that one member of the quartet is a most agile tree climber and even more agile at lopping off branches that could have possibly damaged the antennae, which incidentally are stacked big wheel antennae for 2 metres and a turnstile for 6 metres.

On Sunday, 20th, Bob and Colin once again braved the elements, down 2 degrees to 93, to place the beacon box in position. This was duly achieved and by late afternoon the only remaining thing to be done was a checkout and approval by the P.M.G's Department. This was done on the following Friday (25th) and then the beacons were recommissioned into service almost instantaneously.

— . . . —

WESTERN AUSTRALIA

A Happy New Year to you all. I was almost tempted to wish you the Compliments of the Season, but this would be most ungentlemanly of me. With the festive season once again behind us we can turn our thoughts to annual holidays, acute sunburn, restless kids and all those thousands of jobs still waiting to be done since this time last year. This is the time of the year that each Division sends out extra patrols along the boundaries to repel boarders or welcome guests or something.

At the time of writing, our Secretary (Nell 6ZDK) has once again donned harness after a spot of holidays in Geraldton and a trip around the South West. He reports that everything went smoothly, unlike some previous years!

Talking of harness reminds me that Tom 6DP is about to step into "double harness". He was the recipient of some good advice at a recent meeting. For some reason it seems that Jim 6RU is in a good position to extend instructions on how to spend one's wedding afternoon. Jim was a little bit hazy when asked to recall that eventful day, so perhaps we had better let the matter rest. Ron 6HS repeated some sound advice, which I understand originated from 5PZ (that man again), "Dishes before DX". I might have known that PanSy would get into the act! Anyhow the very best wishes to both you and the little lady, Tom, you are no longer a Displaced Person!

Well we certainly are privileged to live in an affluent society aren't we. Take Bill 6WY and Eric 6VM and Cec 6KK for instance. Understand that each of these guys is piloting a new space vehicle around our sunny metropolis (city to you, sport). My spies tell me that Bill is still a little bewildered trying to juggle the new monster into the same spaces which the "Beetle" used to occupy.

Eric reports that the mobile gear is more reliable in this wagon, no troubles being experienced with antenna change-over relays.

Cec, being more skilful, manages very nicely on only two wheels. This intrepid character ventured out on the South West Highway and negotiated the track to Waroona where he demonstrated the new machine to Bob 6RG. It is the mostest motorbike, with blinking lights, hot and cold sliding doors—and, wonder of wonders—press button starting.

Ho hum, I wonder if I should really mention it or not? Perhaps, just in case some of the other Divisions couldn't bear to look at the results, we could whisper it quietly. VK6 WON THE R.D. CONTEST. Okay, okay, I can take a hint, but it is nice to be able to crow a little bit on occasions.

More news from the Y.R.S. front. Rod 6SE has organised a group of his students at the college at Carmel. Further South we have a report that the boys at Bunbury High are also active under the able leadership of Mr. Tom Tuffin. Y.R.S. boys are certainly giving a good account of themselves. In a recent exam. held by a certain illustrious department, Colin Webster, Graham Down, Colin Shier and S.w.l. Glenn Ogg were all well placed. Nice work fellers! Hope I haven't missed out on anyone, but you know how it is, even my most experienced informers tend to lapse into inaccuracy at this time of the year.

Basil 6BS is the latest addition to the sideband gang on 80, a very healthy signal, too, if I may be permitted an observation. It seems that his nimble fingers transformed an old "final" into a much more acceptable linear.

One thing about Glad 6FG. He doesn't do things by halves! Like when he occasionally turns up at a meeting, he always manages to talk someone else into coming with him. Last time he coerced (wow, that's a better word than "kidded" isn't it?) Ray 6WU into coming along with him. Ray is a near city dweller these days, but complains that some of his mail is doing a round trip to places like Mt. Tom Price instead of flitting gracefully to Homersley via Mt. Hawthorn. Not like our Postal Pixies to make a bo bo like that is it?

An exhausted carrier pigeon finally alighted on my quad the other day, bringing me tidings from the Golden Mile area. It appears that John 6ZBY has taken up residence in Kalgoorlie, much to the delight of Doug 6EP and his confederates. Six metres will sure get a thrashing now! No alterations to the skyline at the moment of writing, but to a fellow of John's calibre this aspect will not pose any great problems. Wouldn't be surprised at all if, aided and abetted by Doug, Percy and the gang, John soon converts to the "full" call sign.

By the time you read this there will probably have been a number of openings for 6 mx DX to our Eastern and Northern neighbours as it is about this time of the year that a rash of newspaper reports of "freak t.v. reception" appear. Ah, the wonders of modern science!

Had high hopes of hearing a bit more of Ted 6TM, after his brief but very welcome appearance during the last Jamboree of the Air, but no such luck. How about it Ted? Is it true that you have shifted QTH a bit nearer to Waroona town?

Bill 6WY and Roy 6RY, those consistent 20 mx hounds, have come up with another beauty. This time it was 3W8D Russell Milroy, who has been issued with the first official call from South Vietnam. I believe the dog pile had to be experienced to be believed.

Well, cheers for now fellers and safe travelling during the holidays.

Reminds me of the Sunday school teacher who had just told her class about Lot's wife who disobeyed instructions and turned around to look back and was promptly turned into a pillar of salt. One kid was scornful. "That's nothing," he said, "my Mum looked round while she was driving Dad's car, and she turned into a lamp-pole."

See yer, Ross 6DA.

HAMADS

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